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HORSES

HORSES

By ROGER POCOCK

Author of "A Frontiersman"

Founder of the Legion of Frontiersmen

Editor of "The Frontiersman's Pocket Book"

WITH AN INTRODUCTION BY
PROFESSOR J. COSSAR EWART, F.R.S

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PREFACE.

By PROFESSOR J. COSSAR EWART, F.R.S.

Roger Pocock's book is in many ways remarkable. It affords evidence of far more erudition than seems compatible with the unsettled and busy life of a frontiersman. In some parts it is highly speculative, deals with problems rarely discussed or even mentioned by hippologists, in others it is severely practical, and affords evidence of the close study of horses and horsemanship in all parts of the world. The more the reader knows of cosmic changes and of the origin, history and habits of horses, wild, feral and tame, the more he is likely to be fascinated by "Horses." The chapters on the History of the horse and on horsemanship are highly suggestive and interesting, but at the moment those on the Pleasure Horse and the Soldier

Horse claim and deserve most attention. We soon forgot about the loss of over 300,000 horses in the Boer War, with the result that when the World War broke out in 1914 we were as deficient in horses as in men and munitions. If the suggestions made by a horsemaster who knows more about Range than Indoor or Pleasure horses—suggestions as to the breeding, rearing, and management of military horses—are duly considered we may have an ample supply of suitable horses for our next war.

J. COSSAR EWART.

UNIVERSITY, EDINBURGH,

September, 1916.

INTRODUCTION.

In the world where the horse lives there is one god. This god is only a human creature, soldier by trade, stockrider, groom, or drayman, but from him all things proceed. So far as the horse knows his god made the girth gall and the harness, the oats and the weather, and most certainly provides a lump of salt to lick, a canter over turf, or any other little scrap of Heaven which falls into the world. So he hates his god or loves him, fears or trusts him, trying always to believe in him, even if he has at times to kick the deity to make sure he is really divine. His religion, his conduct, his whole value, depend upon that poor god, who is usually well-meaning enough although wont to practise a deal of ignorance. To get better horses one must improve the strain of gods.

As a god to horses I was never quite a success, however hard I tried to live up to a difficult situation. I attempted, for example, to learn about my horses from scientific books, yet found the scientific writer rather trying. He calls an animal who never injured him by such a name as *Pachynolophus*. This may be safe

enough behind the animal's back, provided the philosopher makes quite sure that it is really and truly extinct. But suppose he met one, would he call it a perissodactylic ungulate to its face? Not at all! He would shin up a tree and use worse language than that.

So if the Reader finds me ignorant, I beg him to lay the blame on men of science who have dug up dead languages to make them a trade jargon lest any education should reach the vulgar.

In his "Tropical Light," Surgeon General Woodruff, of the U.S. Army, makes no mention of horses, but opens up a new field of thought. Professor William Ridgeway, in his "Origin and Influence of the Thoroughbred Horse," commands the respect of every horseman by his researches in history. Professor Cossar Ewart, by far the greatest living authority on hippology, has, apart from the teaching of his books, most generously granted me his private criticism. For the rest, burning my books behind me, I have ventured to write about horses just because I love them. An old rough-neck of the American ranges, who, living with horses, has tried to understand them, sets down a few ideas which may be of use to horsemen.

CHAPTER I.

THE ORIGIN OF THE HORSE.

The material used in making a horse consists of grass and water. We cannot make one because we are too ignorant. We know that for such a making wisdom is needed beyond the last conception of our hearts, knowledge far above the scope of our pretentious little sciences, power omnipotent. Such attributes of wisdom, knowledge and power are divine.

The Almighty made the horse out of grass and water. From the generating engine which we call the sun He used certain energies dimly perceived by our science, the chemical, physical, electrical and psychical forces which evolved, moulded and coloured the mechanism of a creature strong, swift, enduring and beautiful, which is inhabited by a pure, courageous, generous spirit like that of a

human child. It only remains for man to shut this creature up in a box, and then cut off his tail.

HORSE ANCESTORS.—To find the origin of the horse, one must trace back to the Sixth Day of the Creation, a period known to science as the Dawn of Times Present. The lands and seas were not arranged as in our maps, for there was a Continent on the site of the North Atlantic, and broad seas rolled over the areas now filled by Europe and North America. The climate, too, was different, for except along the Equator, the skies were rarely clear, but very cloudy, with enormous rains. The air was that of a hot-house, and, even at the poles, trees such as the magnolia slept through the winter night, and flowered in the warmth of the summer day. Except to leeward of big continents and mountains the lands of the whole earth were a continuous forest.

That was the closing phase of the long Age of Dragons. The principal beasts of the sea, the land and the air were reptiles who laid and hatched eggs instead of giving birth to living children. Few of them were so large as the elephants and whales of our own time, the greatest were already extinct, but still there were enough uncouth and monstrous

beasts to make life exciting for the creatures on which they fed.

Hidden away in the forest there were little animals, of reptile descent indeed, but quite free from family pride. These converted reptiles were filled with the first divine quality which ever appeared in the world, that mother-love which suckles the young at the breast. We will call them the Longtails.

We humans often feel that there is not enough food to go round. We find it hard to make both ends meet. We have to defend ourselves or run from our enemies. So it was with the Longtails, who were always hungry, hard up, and bound to fight or run. To put it roughly, some tribes of the Longtails took to hunting, and became the ancestors of all beasts of prey, some took to the trees as a refuge and feeding place, and so became the ancestors of apes and men. But our business is with those who took to a vegetarian diet and a habit of hiding or running. These stood on tip toe looking out for danger, or ran to escape being eaten. For such purposes the five-toed foot of the ancestral reptile, most useful on soft ground, became somewhat clumsy and awkward. For running they were better off

without a widely splayed foot, so with the passing of many generations their needless inner and outer toes shrank up the leg, became useless, and finally withered away, until no trace remained. Here came the parting of the vegetarian running animals into two big families. One family ran on the middle pair of toes, thus becoming the ancestors of the cloven-hoofed pig, deer, antelope, sheep, and ox. The other family ran upon the middle or third toe, and became the ancestors of the rhinoceros, the tapir, and the horse.

In the dense forests some of the vegetarian tribes of animals had on the face two little bags or glands, to hold a strong-smelling liquid. This perfume dropped on the herbage helped the members of the herd to scent one another's trails, and so keep together for company or defence. On the skulls of some kinds of horses there may still be seen the hollow where the sac used to be.

The bald skin of the pig is boldly painted in splashes of pink and brown to imitate the lights and shadows of forest undergrowth. The forest ancestors of the horse were bald, and painted just the same way ; and their forest colouring may still be seen under the

hairy coat, especially at the muzzle, where the hair is thin.

Of direct ancestors to the horse the earliest known was a little fellow called Hyracotherium, coloured no doubt like the pig or the hairless Mexican dog, and not bigger than a toy terrier. His range extended from England to New Mexico, across the old Atlantic continent. In him the original five toes had been reduced to four on the front foot, and three on the hind, as with the tapir, who is the very portrait of a horse-ancestor, although of larger growth.

The tapir was ever a staunch conservative preferring death to reform. So he remains, one of the most ancient of all living animals, and relic of the long forgotten ages when the world was one big forest. Nowadays the tapir range which covered all the northern continents has shrunk to three districts widely sundered: Brazil, Mexico, and the Malay Peninsula. In all three he is dying out, and in a few more years will be extinct.

From the tapir's habits we may reason that the horse ancestors were creatures not only of the deep glades of the forest, but also of closely wooded mountain ranges. They were shy and harmless, feeding at night on buds, leaves and the tender shoots of bushes, not on grass.

To this diet the horse reverts quite readily in times of famine, and in spring before the new grass sprouts, while the stable vice called cribbing develops when there is not enough bulk in his forage. The ancestors were fond of bathing, and when hunted would take refuge in the water. It will be noted that although wild horses do not bathe, the tame stock are excellent at swimming. The dappled skin of the tapir had grown a coat of hair, dark brown in the Americas, their original home. The long tail had shrunk, and in the tapir is reduced to a mere bud.

But the main interest is in the tapir's snout, which, like the elephant's trunk, has wonderful powers of holding and tearing down branches, of feeling, sensing, and handling. The horse-ancestor had a tapir snout of which the horse's upper lip is the survival. Play with any horse and you will notice how the lips try to curl round and grip one's fingers, to bring them within reach of the teeth. They will curl round, grip, and tear the bunch grass or pampas grass of the wild ranges. They are softer than velvet, delicate as a baby's hand, sensitive as the fingers of an artist, will caress like a woman's lips. The short hairs have an exquisite sense of touch, the beard bristles

are used to sense grass with in the dark, and the whole instrument is wondrously designed to select sweet grasses, rejecting poisonous or unwholesome plants, so that feeding goes on through hours of total darkness.

Had the Earth remained an unbroken forest under a roof of cloud there had been no change since the Age of Dragons, no mighty drama of Creation lifting man and horse out of the shadows to work together as master and servant in the conquest and taming of the wilderness and final subjugation of the World.

The one great factor in Earth's history is the lessening of the sun's heat. Through long revolving ages the heat which the Earth received from the sun diminished. Ever less vapour was lifted from the Equatorial seas, the world-roof of cloud thinned out and disappeared; direct sunshine poured down instead of the endless rains; there was no moisture left to nourish the worldwide forest. Little by little glades opened in the woodlands caused by drought, savannahs replaced the timber, of tall jungle grasses, the openings widened into prairies, and vast grassy steppes, thousands of miles in breadth, evolved at their centres an aching core of desert. So we have reached the phase when forest, prairie

and desert each claim one-third of the land surface. We are passing on to the phase, which Mars has reached, of world-wide desert, and beyond that is the far future when, like the Moon, our Earth will swing dead through the great deeps of space.

As the slow tremendous change of the Earth's climate narrowed the forest, there was no longer food for all the woodland animals, and some of them ventured out into the open glades. Here was a final parting of the ways between the tapir who stayed in the woods and the horse-ancestor who went out into the open. He was as yet no bigger than a sheep, and still wore three toes on each foot. but the grass diet agreed with him, for his tribe soon grew to the size of an English donkey. The firmer ground no longer needed a wide tread to the foot. Slowly the second and fourth toes shrank away up the leg, and hung there like the dew claw of a dog, sometimes surviving more or less even in human times, as with Julius Cæsar's charger. The next ages evolved an animal the size of our ponies, running on one toe hardened to the hoof we know to-day. The snout diminished, while the tail became a fly whisk.

So we have the beginning of a group of

animals the tarpan (Prejevalski) zebra, quagga and ass. They are so much alike that one cannot easily tell from the bones to which kind a skeleton belongs. We must think of them, then, as varieties of the horse.

CHAPTER II.

THE ORIGIN OF HORSE VARIETIES.

PROPOSITIONS. In the study of any subject, if we can only begin by clearing our vision, we shall have a sporting chance of avoiding muddle.

The horse, like man or any other animal, reflects his environment in times past and present.

1. If all countries had equal lighting, all horses would reflect one colour.

2. If all countries were equally warm, all horses would grow the same thickness of coat.

3. If all countries had equal moisture, all horses would show similar endurance.

4. If all countries had one type of landscape, all horses would show the same markings.

5. If all countries had one soil, all horses would be of one build.

6. If all countries had one weight of forage to the acre, all horses would have one bulk.

7. If all countries had one quality of forage, all horses would have one strength.

8. It follows that the study of light, heat, moisture, landscape, soil, and food should explain the origin of the wild types of horses. Our breeds are got by crossing from these varieties.

If, therefore, the facts which we find out by study shall correspond with the reader's own experience of horses, no further proof is needed ; but if they fail to appeal to the reader's sense and judgment, no balancing of proofs upon a point of falsehood will save a useless book from the flames which await waste paper.

PART I. COLORATION BY SUNLIGHT.

The best way to train one's sense of colour is to dabble in landscape painting. At first, one feels that there must be a personal Devil, but with luck the colours begin to clear, showing that the tones of night and the deep sea are based on indigo, while those of the day are blue, red and yellow variously mixed. The blend of blue and red is violet ; the mixture of blue and yellow gives us green ; and if we want an orange we use red and yellow. The blending of all seven is sunlight in theory, but makes mud in practice.

In nature there are permanent colours like those of the night, and transient hues like those of the sunrise or sunset. So the blue of the sky and yellow of the earth make the green of living plants which seems to be permanent until, in decay, the blue turns out to be transient, and passes away leaving the herbage yellow. It is odd that the natural food of the horse is dried herbage from which the blue has faded

And so it is with man. We may eat green salads, containing transient blue, but the permanent colours of our food are free from blue, and based on red and yellow. Neither horse nor man would fatten on blue food.

Sunlight shining through blue glass will stop the growth of plants. The various actions of coloured light upon the human body are being studied in many hospitals.

The blue indigo and violet, or actinic rays, appear to have a special mission in burning bad microbes, such as the germs of disease. A green forest, for example, despite the permanent yellow in its colour, is said to be partly transparent to these rays which kill germs lurking in the soil. The flesh of men and beasts is red and yellow, save only for the blue tinge of blood from which the oxygen has

been exhausted. Yet even despite its colouring, the tissue of the flesh is partly transparent, so that actinic rays may kill bacilli, and sunshine is used as a medicine for the sick. But the rays which begin by killing germs may be strong enough in time to burn the living tissues. For that reason man and the greater animals are armoured by red and yellow liquid paints in the layers of skin, which vary in strength and volume with the degree of sunlight in each climate, from pale hues in cloudy districts of low sun to an intense black in the tropics.

Stocks native to forest shelter such as men, elephants and pigs are guarded only with skin body colour. Those exposed to direct light—horses, cattle and sheep, have also a coat of hair as a second armour against the actinic rays, and this also varies in colour with the strength of sunshine, from white in the regions of snow to the golden dun of lions and tigers, the dun and bay of horses and the black of many species in regions of strong light.

In men and other animals there is little red flesh covering for the brain, the spine and the great ganglia of the nerve machinery. So many animals like the lion and bison have manes as an extra shield for the nerve centres.

The human head and neck, for instance, grow hair, not to encourage barbers, but for the prevention of sunstroke, and this varies in colour with the degree of sunlight. So all natural breeds of horses have a dark forelock and mane with a streak of strong brown or black colour from the withers to the root of the tail, thus guarding the whole length of the spine. This armour and shield defines for us two primitive types :

The Bay of the Desert produced in fierce light the year round.

The Dun of the Steppes produced in fierce light limited to the summer.

And here the need of clear thought leads to a new definition of " protective " colour.

The dun Siberian tiger, largest and fiercest of all cats, hunted the Dun pony of the Steppes. The dun lion of Africa hunted the Bay horse. Had both cats and both horses been painted sky blue, their relative chances in the chase would be exactly the same. They do not owe meat or safety from attack to their body colour. Both species would have perished under the actinic rays of sunlight but for their equal shield of non-actinic colour.

The purpose of body colour is defence from actinic light. Only the markings are

protective as concealing animals from one another.

So far I have not been able to find in books about horses these applications of facts accepted by men of science, which are of use to horsemen. In the light of such evidence the close hogging of horse's manes needs reconsidering.

PART II. THE GREAT ICE AGE.

Unless a fellow can swim he has no business to go out of his depth ; but if he minds his business, he loses all the fun.

It is the application of these two principles which leads me to a problem in the history of the horse which nobody has solved.

The species is native to the Americas, where it became extinct. One theory of this extinction imagines a germ, like that of horse-sickness, whose range covered all latitudes from tropic to sub-arctic. Such a hearty microbe as that would seem unusual.

The other theory relates to a disagreeable change in the climate, which overwhelmed the drainage basin of the North Atlantic with a field of massive ice. That seems conclusive until one reflects that the Pacific slope of the United States and the continent of South America remained as warm as ever. The cold

of the Great Ice Age does not explain the wiping out even in North America of the camel, elephant, tapir and horse.

It has been my good fortune to make a series of voyages to Bering Sea and Norway in the winter, and in summer along the flanks of both the St. Elias and the Greenland ice-caps. In these journeys by sail and steam, in boats, in canoes, with many landings and scrambles across country, I was able to test the theories of Glacialogists against the actual facts of the Great Ice Age.

The Croll theory makes the orbit of the Earth to change at regular intervals into a long ellipse. By roasting one entire hemisphere it provides vapour to cover the whole of the other hemisphere with snows which do not melt. Evidence is scratched up and made the most of for previous ice ages. An imaginary series of cosmic cataclysms is invoked to explain one merely local unpleasantness.

Another theory sinks Central America—politically quite a good idea—and throws the Gulf Stream into the Pacific, leaving the North Atlantic to be frozen. It does not explain the American lobe of the icefield which brushed the foothills of the Rocky Mountains in a region outside the influence of the Gulf Stream.

It was never the business of Glacialogists to notice that under the inland ice and the great lava floods of Greenland lie pressed magnolia leaves in the high Arctic. These tell me of cloudy skies saving the summer's warmth all through the polar night, of a vast cloud sphere sheltering the whole Earth from a sun much hotter than we know to-day. The Ice Age to me is an incident in that clearing of the skies which dried the world-forest, made the grass steppes and deserts, and evolved the horse.

The Glacialogists make the Ice Age an episode of the past. Without the slightest relevance to any obliquity of the Orbit, or vagaries of the Gulf Stream, the Ice-cap persists to-day as a living fact. I have been there, have seen it, and cannot be persuaded otherwise. The forces which created the Ice-cap are still at work, and as they merely strengthen or relax, the Icefield grows or shrinks. These forces made the Ice flood to plough the fields and train the folk for seeding a crop of human empires—British, American, Russian, and German world-powers. The ice which prepared town-sites for Moscow, Petrograd, Berlin, London, and New York, may come again to sweep them all away. We are not behaving ourselves so very nicely.

I have no theory as to what forces enlarged or contracted the ice flood. The theme of this study is the horse, a creature of grass and water constructed by the forces in sunshine and fresh air, and coloured by the skies. To the skies we must look if we would trace his origin, to the mechanism of the Ice-cap if we would know how his varieties were specialized out of the general type. So let us have a look at the machinery which made and maintains the Ice-cap.

PART III. THE SOU'-WESTER.

We have to study four regions of one great Sou'-wester wind, which is known to navigators as the South-west Counter-Trade.

WESTERN REGION. The tropic sunshine lifts masses of hot, tremulous vapour from the surface of the Equatorial Pacific. This vapour lifts to a great height and there condenses into clouds. The clouds are swept by the south-west wind and form their floor at a height above the sea of about two miles. The Rocky Mountains reach up bare and stony hands to clutch at the flying moisture and bring down whirling snowstorms. On sweep the cloud fleets across the Canadian Plains with rarely a drop of rain to spare through the summer for the thirsting grass beneath. But

slowly the cloud-floor slopes downward until at last the cloud-fleets come to ground, and the breath of the sou'-wester becomes visible as the Northern Forest. Beyond that forest the wind trails its cold vapours over the sub-Arctic tundras of North-Eastern Canada, lashing bleak rains on Baffin's Bay, to spend the last of its moisture in the form of snow upon the Greenland Ice-cap.

CENTRAL REGION. From the eastern part of the Equatorial Pacific, about the neighbourhood of the Gallipagoes, a second *echelon* of the sou'-wester brings its immense load of flying clouds high in the air across the United States to slant down out of the skies and brush the Atlantic in the Forties. Strong gales trail their clouds along the Gulf Stream, taking a deal of warmth out of that current. Exposed trees in North-western Europe are slightly bent by the stress of Atlantic gales, while all the trailing clouds discharge their cargoes of warm rain across the Baltic Region. The British Isles, for example, get an annual ration amounting to thirty cubic miles of water fresh from the Equatorial Pacific.

These two large *echelons* of the sou'-wester carried the vapour which once fell as snow to form the Icefields of the Great Ice Age.

The skies were clearing. The planet was being stripped of its cloud roof, so that its warmth from the sun was radiated at night and in winter directly into Space. Except to leeward of the Gulf Stream, the lands of the North Atlantic are still sub-Arctic as in Labrador. These lands were more extensive then than now, forming a bridge about a thousand miles wide from Arctic Canada across Smith's Sound to Greenland, and thence by way of the Faroes to Scotland, which was part of the European main. On this bleak bridge which spanned the North Atlantic permanent snows heaped up to mountainous heights forming the nucleus of the giant Ice-cap. Its western lobe touched the Rocky Mountains and the Missouri Valley, its eastern wing covered the Russian plains as far as Moscow, and southward flooded the German Empire. It may be that the North Atlantic bridge, remnant of an elder continent, sank slowly until it foundered under its load of ice. So the sea melted the ice and the climate began to mend.

EASTERN REGION. A third *echelon* of the sou'-wester comes from the equatorial belt of South America down to 15°s. This does not take up any great load of moisture, for the

wind blows nearly dry across the heights of air which overhang the Atlantic. It has little moisture to spare for the Mediterranean summer, none at all for the levels of the Sahara, Arabia, Persia, and the deserts of Central Asia. The lands to leeward of Brazil are deserts.

FAR EASTERN REGION. In Asia, the movements of the sou'-wester are complicated by the south-west monsoon, and the immense ranges of the Himalaya. Eastward lies one more *echelon* of the South-west Counter Trade. Just as the sou'-wester in the North Atlantic is warmed by the Gulf Stream, so the sou'-wester of the North Pacific is warmed by the Japan current. Before the uplift of the St. Elias Alps, the region of Alaska, and of Bering Sea was a warm and well-watered lowland. Alaska still grows gigantic timber in latitudes where North Scotland and South Norway have only scrubby bushes.

PART IV. THE STORY OF BERING LAND.

Any reader who is really and truly interested in tapirs will remember that some live in the Malay States, and the rest of them in South and Central America. Between these countries there is a slightly flattened facet of the planet filled from remote ages by the Pacific Ocean. Nobody with the slightest

liking for tapirs would suspect them of swimming across, and since their family existed there has been no land passage round the southern edge of the Pacific. So, if we would find the ancient tapir range which once connected Malaya with Mexico and Brazil, we are driven to search for a pathway round the North Pacific.

The map of the ocean floor shows the Pacific Deep as reaching northward to the sixtieth parallel. Beyond that lie the new shoals of Bering Sea, with a ground-swell so terrific in winter that I have seen a hard-bitten middle-aged seaman driven mad with fear. This is the site of Bering Land, an ancient country about the size of Scandinavia, which joined the mainlands of Asia and North America. The latitudes of this land were those of Norway, and it formed the basin of the lower Yukon.

Before there was any polar cold on Earth, when the magnolia blossomed in Greenland, this cloudy rain-swept country was warm enough for tapirs. As the sky cleared it managed to harbour camels, and became a pasturage for animals of the horse family. Let us see then whether these were of the actual species we call the horse.

THE LANDSCAPE. Warm lands with little sunlight, such as Ireland, have green turfed grasses. The polar summer which is one long day covers all pastures with a blaze of flowers. The bushes also yield a bounty of blossom and wild fruit. The mosquito season is the great event of the year.

So we may see the meadows beside the lower Yukon, green pasture starred with flowers, bushed, wet, mosquito-stricken range for the bearded Celtic pony, utterly unlike the sun-baked golden steppe of the Dun horse. We must cast back to earlier times when Bering Land was clouded, torrid, range for ancestors of our modern horses, the pasture which changed the brown tapir of Brazil into the skewbald tapir of Malaya. At that time preglacial America had seven species of three-toed horse-ancestors, some of which may have ranged westward across Bering Land into Asia, and there given birth to the stock of the Old World.

With the onset of the Great Ice Age the growing weight of the American Ice-cap seems to have strained the loose skin of the Earth, which, in the Columbia Basin cracked, pouring forth floods of lava to overwhelm a region nine hundred miles in length, eight hundred wide.

A series of rock waves folded, forming the coast or island ranges from California northward and culminating in the stupendous Alps of St. Elias. There gathered a lesser Ice-cap, pouring its glaciers down the Alaskan and British Columbian fjords.

It was this barrier of ice which put an end to all migrations of animals. The Alps of St. Elias closed the path-way between those two groups of continents which so far had been the common breeding ground for beasts and men. Within the narrowed breeding ground of the Americas the horse together with the camel, and many other species, became extinct.

Old Bering Land had become sub-Arctic, the home of the Mammoth, a maned roan elephant. Then the Pacific flooded the plains of the Lower Yukon, and formed the shoals of Bering Sea. Both in Asia and in America faint memories remain of a drowned world. In Assyria and in British Columbia the legend tells us of a hero, and of rescued folk in a fleet of three hundred canoes.

So the two groups of continents were finally cut apart at Bering Straits. And now a ring of flaming craters girdles the Pacific, the fit finale to a tremendous drama.

PART V. THE MARKINGS OF THE HORSE.

Darwin wrote of the probable "descent of all existing races from a single dun-coloured, more or less striped primitive stock to which our horses occasionally revert."

The stories of the Great Ice Age and of Bering Land have shown us a variety of swiftly changing climates in which the original three-fold dun striped ancestors begat a special

ERRATUM.

Page 25, line 9. *For* three-fold *read* three-toed.

downs and valleys, bred each their special type of the wild horse.

EVIDENCE OF THE WIND. It is not so very long since the last clumps of timber vanished from the steppes. Still on the North American range one finds the trunks and roots of forest trees which silicate swamps have changed into masses of jasper onyx and chalcedony; and these have not had time to sink as stones do into the soil. In a seven hundred mile ride across the Canadian plains, I found a living clump of three pines distant a hundred-and-fifty miles from the edge of the shrunken forest. Such shelters have indeed so lately disappeared that the horse has not yet learned the trick of

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The stories of the Great Ice Age and of Bering Land have shown us a variety of swiftly changing climates in which the original three-fold dun striped ancestors begat a special type of horse for each kind of habitat. The high lands and high latitudes, the low lands and low latitudes, the tall grasses, the short grasses, the open woodlands, the northern downs and valleys, bred each their special type of the wild horse.

EVIDENCE OF THE WIND. It is not so very long since the last clumps of timber vanished from the steppes. Still on the North American range one finds the trunks and roots of forest trees which silicate swamps have changed into masses of jasper onyx and chalcedony; and these have not had time to sink as stones do into the soil. In a seven hundred mile ride across the Canadian plains, I found a living clump of three pines distant a hundred-and-fifty miles from the edge of the shrunken forest. Such shelters have indeed so lately disappeared that the horse has not yet learned the trick of

wind endurance. If his ears and nostrils were not so fearfully sensitive, he need only face up wind, and the hair of his body would be blown down flat to protect him. As it is, the extreme sensitiveness of his face compels him to stand or drift with buttocks turned to the gale, tail tucked, head down. It is only in that position that the hair is blown up from the skin and fails to give him protection. We may conclude then that he was inured to torrid summers and even to polar winters before he had to encounter strong gales away from shelter. Long after the three-toed ancestor had become a horse, the steppes had abundant tree clumps for wind breaks in heavy weather.

THE AFRICAN BAY. In every striped horse it seems a general rule that the body stripes are curved in such a way as to point to a spot on the ground midway between the four legs. The leg bands merely cut the upright lines of the limbs so that these disappear. Some natural process of colour photography has made the body stripes a bold copy of the upward and outward spread of the tussock grass. It was for concealment then among the rich forage of the tussocks that some of the parent species wore a gorgeous livery which passed on to the Zebra.

From all accounts the Sahara is the bed of a recent sea, but, possibly along its eastern side, a horse range extended from the Soudan to the shores of the Mediterranean. Such range had not less than ten inches a year of rainfall, carried by the sea breezes from surrounding waters. There was moisture enough for trees, and there are abundant traces of quite recent timber.

The winds were drying, the clouds were burned out, the light was increasing to a terrific strength, and the tussocks began to fail. On the American range I have noticed that these tall grasses, abundant only thirty years ago, have become quite rare since the pasture was overstocked. As the tall grasses perished and streaks of naked desert crept into the dying pasture, all hope of concealment for horses was at an end, the brilliant striping ceased to have any value, and the need for speed outweighed the need for sleep. Three and a half hours for sleep, standing, suffices the modern horse.

And as the cover vanished, every possible military precaution became imperative against surprise by lions. The gay striped painting had become a danger, and whole colour was the last chance of concealment for purposes

of rest. Close herding by the stallions, a single line formation with vedettes and flankers, signals by cries and stamping, and, above all things, speed, were needed to save the horse under the new conditions. The arched markings on the face of the striped horse changed to a star, the leg bands to stockings. White marks to identify members of the herd on the darkest nights. Such markings are very common among horses of desert descent.

As the deadly actinic rays of light poured into the body between its bars of painting, the natural dye secreted in the skin began to fill the bright streaks with strong colour. So the striped Dun became the desert Bay, with black points and white markings, gifted with the intelligence needed in family and tribal life, but above all things endowed with a speed which was the despair of lions and is the glory of all honest horsemen. So entirely was the danger from lions overcome that the Bay horse has forgotten the art of bucking, which once was needed in fighting beasts of prey. Speed has given the steel-hard hoofs, the steel-strong limbs, delicate modelling to cut the resistance of the air, the tail set and carried high for the finest steering, and almost every other trait of our Barbs and Arabs. So

intense is the light in his native pasture that even the refracted glow from the ground has had to be met by dark colouring of the under surfaces, wherein he differs from the horses of higher latitudes.

ZEBRA AND QUAGGA. Southward from the great Desert the forest of Equatorial Africa is bordered to the eastward and the south by grass lands. In these a few patches of jungle and tussock grasses have preserved the colouring of striped horses down to our own time. Their painting is most brilliant towards the Equator, fades in the higher latitudes, and in Cape Colony only the neck and shoulder stripes remained in the Quagga breed. The land does not continue into the latitude of the Dun horse. It is quite possible that with the coming of the Boers tame cattle ate off the Quagga pasturage, but rifles have put the wild stock to an end with the advance of human settlement.

THE ASSES. These creatures of mountainous deserts are coloured like the boulders of a hillside, but rely for their safety rather on high intelligence and sure-footed speed. Being desert animals of course they are dry inside, so that their efforts to produce the most beautiful music merely rub leather against leather like

the sole of a creaking boot. They should be petted like operatic tenors, and indeed there are no animals in the world who improve so rapidly in response to decent treatment.

There is a legend that the ass who carried the Cross of our Lord Christ upon the way to Calvary had ever afterwards its shadow on his back, still worn by the African breed as a special badge of honour. It is called the endurance mark, and this with the same leg bands is the special brand of the Dun horse of Asia.

THE DUN HORSE. It was in the Yellowstone Park that I paid ten dollars for a thirteen hand pony called Buck, a bright Dun with the endurance cross and leg bands. Below the black knees and hocks he wore white stockings, and had black mane, tail and points. He taught me the real protective colour for short grass. His upper and lower body lines were the curves of prairie ridges, while the limbs were so cross-coloured that the upright lines became invisible, save when he moved, at about two hundred yards. It was lucky that he always came at my call, because so far as my poor eyesight went, he was lost to me every evening so soon as I sent him off to graze. His wall eye and game knee were acquired from meeting Christians, but an odd trick of carry-

ing the lower jaw sideways while he was thinking, an unusual sweetness of character, and most uncommon pluck, may have been primitive traits. He trotted with my pack a thousand miles, until in Utah I gave him to a cowboy rather than take him on into the desert ahead, where he might die of thirst. I did not know in those days that he was a desert horse who knew a deal more about finding water than ever I shall learn.

The horse became extinct in the Americas, the Quagga in South Africa, the wild Bay in Northern Africa. The numbers of the wild asses and of the zebras are shrinking rapidly. The wild Dun, or Tarpan, whose range was the whole steppe of Russia and North Asia, is now represented in three small districts of Mongolia by the Prejevalski herds. So far, then, as wild horses are concerned, the species is dying out.

Among tame horses, to judge from what one sees in the larger stables, there must be at least one hundred Bays, Browns and Chestnuts to every real Dun. All breeders select from the Bay type as distinguished from the Dun, whose only special value is in endurance. In the run-wild or feral herds, however, the Duns have a fair chance, and form a large proportion of the stock. They are not only hardy but

also fertile. If man became extinct, the steppes and prairies would breed Duns, and gradually kill out the other types.

From the fierce dry heat of the Gobi Desert to the utmost rigors of Siberian cold, the Dun will thrive wherever there is grass. His coat is warm and cool for any climate, greasy enough to shed rain, and proof against every weather except wet driving snow or a strong gale. Through the longest winters he keeps alive by grubbing through the snow to get at grass. The droughts of summer may so increase the journey between food and water that he gets very little time for rest, but somehow he manages to pull through, the last of all horses to yield to difficulties. Lacking the speed and beauty of the Bay, he lives where the Bay will die. In danger or difficulty the Bay is a fool in a panic, while the Dun keeps cool, reasons, and uses common sense with a strong, hearty valour. One would select the Bay for pleasure, but the Dun for serious work under the saddle, for road endurance, for long and rapid marches, and all that makes mounted troops of value in campaigns.

Just as the working man may be rendered irritable and even vicious by unfair treatment in our social life, the working horse is made

ill-tempered and dangerous to handle by bad horse-mastership. So the Dun has a terrible reputation, and in his defence I am a sort of Devil's advocate. He is the typical range horse whose manners and customs will be the theme of the next chapter.

PART VI. CLOUDLAND.

We have seen the close resemblance of warm winds and seas between the North Atlantic and the North Pacific ; but it was only in the North Atlantic region that the great Ice Age, in long pulsations, widened and shrank its Icefields. Ten thousand years ago (Wright) in the Niagara District, and seven thousand years ago (de Geer) in Finland, the edges of the Icefield were withdrawn for the last time, and the climate began to get warm and comfortable.

In America and in Europe, as the ice retreated, a belt of tundra crept closely in its wake, and in the rear of that a belt of green turfed grasses.

In Eastern Canada, and North-western Europe these green turfed pastures are varied with woodlands of such trees as cast their leaves in winter. Amid these changes the horse had vanished from North America, but survived in Asia, and slowly extended his range as the ice retreated from Europe. In Europe

as in America, man also widened his hunting grounds in the wake of the melting Icefield.

In the big region of the south-west wind the lands which surround the North Sea and the Baltic are different from all others, being under a low sun, cloudy, with only one day's sunshine out of seven. And Cloudland breeds a special type of man with blue eyes, a ruddy skin, and hair of chestnut, bay, brown, or dun, colours like those of horses.

Under the grey skies of Cloudland, man has lost the protective colour which in all other regions of the world defends the body from actinic light. I think we shall find this true of the horse also.

The original striped colouring of the Bays and Duns never developed in Western Europe with its climate of cloudy skies and verdant pastures.

THE WHITE HORSE. Now let us study the conditions following the Ice Age in Southern Russia. Here the Dun horse has a white coat for sunny snowy winters. Rumour says that foals are not born white, and it must be remembered that snowy winters are recent even as grassy plains.

This whiteness is not, like the summer colouring, a paint issued by the body to tint

the hair, but a mere absence of any colouring matter. It is as though the animal saved his stores to paint his inside to a warm red during the cold season instead of wasting it in mere vanity upon his outer clothing. At the same time nothing could be more reasonable than a white coat for concealment against a snowy background. Hares, Eskimo, and lots of other tribes are most particular in this matter, and among the best people of all snowy regions a white suit is the correct mode for winter. It may be that some tribes of ponies neglected to change in the spring, and so became conspicuous in summer, a fatal error where there are wolves about. These were not likely to prosper and raise children except under man's protection, so one suspects that white coats for summer wear date only from the human period. Men have a feeling, too, that the white horse was so beautiful that he must be sacred, a special gift of the gods. Without any special merit, being indeed of lower stamina and endurance than any other horses, the white stock were favoured by breeders. Left to themselves, they would die out rapidly in any sunny climate. One notes, however, that the Persian wild ass has a silvery white coat, the hue of his native desert. There are many animals whose

dark hair is white at the tips, so that they are really brunettes who masquerade as blondes.

BEARDED HORSES. The ancient horse-eating artist-savages of France have left us portraits of ponies strongly bearded under the lower jaw. In the earliest portrait we have of the Celtic pony (Ewart), Odin's eight-legged Sleipnir shows the coarse bearded cut of jaw. The Celtic pony types are bearded to the northward, clean-shaven towards the southward parts of their wide range. The Prejevalski, who is the Tarpan of Asia, is slightly bearded. So is the Kiang or wild ass of Asia. One finds the beard bristles in all the northern breeds of horses, not in the desert stocks to the south. Why then should northern horses want to grow a beard ?

A horse has so small a stomach that his day's work to get sufficient grass is seven hours. Up to about fifty degrees of north latitude, he gets seven hours of daylight even in mid-winter. Northward of that he needs beard bristles to aid him in feeling and selecting grass in the darkness. Southward of that, if he is hunted by wolves or tigers, he needs a few beard bristles for night grazing except in cloudless regions where there is always starlight. So,

roughly, the range of bearded horses is that of long dark nights.

THE REGISTER OF SIZE. The size of horses varies with their nourishment.

On the scattered but rich bunch grasses of the desert, where there is much travel for a little food, the pasture registers the stature of the Bay as about fourteen hands two inches.

The scattered but rich bunch grass of the American steppe makes horses prosperous in summer but famished in the winter, so that the pasture registers a smaller horse than that of the desert—up to thirteen hands. Under the same conditions we may take the register of the Dun in Asia as up to thirteen hands.

The poor grass of the British moors registers a pony of ten to eleven hands.

Strong feeding of grain and hay registers stabled horses up to nineteen hands.

The great abundance of green turfed grass the year round in North-western Europe should, under its best conditions, register as large a horse as either steppe or desert.

THE THREE PASTURES. The Bay pasture and the Dun pasture are each of continental size, whereas the green pasture is only a small province. In the same way, the rock formations of the Bay and the Dun pastures are each

continuous for several thousands of miles. In sharp contrast is that little ragged edge of a great continent known as North-western Europe, a district which has many times been flooded by the sea, each bath making new beds of rock.

The lowlands of Great Britain, for example, have been frequently submerged, and the island shows samples of almost every rock formation known upon the earth. This European pasture then is not only small, but also varied in its rock formations, its soils, and its landscape. One may get a standard horse of registered size in the Bay range or the Dun range, but would expect to find on the green range of Europe not only many colours, but also many breeds derived from the primitive stock, strains of all sorts and sizes. A glance at three formations will show how much the build and size of a horse is varied by the rocks.

GRANITE. In North-western Europe the granitic or speckled formations form upstanding moorlands. The poor but abundant grass maintains ponies both light and heavy of build, derived from several kinds of ancestors. They are so secured from attack by beasts of prey that they do not need to run far and fast on ground where running would be dangerous.

These are grouped under the general name of Celtic pony.

LIMESTONE. Allowing for some districts, like the central plain of Ireland, where the Ice-sheet has left the country very badly drained, a limestone formation usually makes dry soil. The vegetable mould may hold a little water and make mud, as on the chalk downs, but the rock is so porous that most of the rain soaks down, and the waters run mainly underground. Moreover, the vegetable mould gives chemical qualities to this water, which is enabled to dissolve the rocks and form caverns on the underground water courses. At the same time the water becomes 'hard' with lime in solution, so that the springs will petrify moss and twigs.

The dryness of the ground tends to make horses sound of bone. The carbonate of lime in the water supplies them with the material for bone. As the result the bones are very light in proportion to their strength. So this pasture registers a well-built and very light horse. If such an animal is of Bay blood, he is larger and swifter than the Arab, lacking only in soundness and in travel endurance.

CLAY. As clay holds water, its soils provide abundance to the grass roots, and so produce

thick turf with a great weight of green forage to the acre. Such heavy feeding without any exercise in search of water, would, after the killing out of the wolves, tend to produce a large, heavy, slow-going gentle horse with steady nerves such as our draught stock, lacking in that soundness of feet and legs which is limited to the breeds of arid regions.

So far, the argument presents for the green pastures of cloudland horses of several colours ; and, for the varied rock formations in the North Sea and Baltic basins, horses of many types.

Professor Ewart traces among the ancient wild horses of the forest species three very distinct types :

1. At the time when the glacial drift of the Rhine and Weser valleys had a climate like that of the Outer Hebrides of to-day, the conditions of cold and damp matured the Diluvial horse (*Equus Caballus occidentalis*). This animal stood fifteen hands, had a longer face than the general forest type, was coarsely built, had heavy fetlocks, a short upright pastern, a broad round foot. This is the cart horse breed.

2. The Grimaldi Grottoes in the Riviera preserve remains of a forest-upland horse,

large, coarse, heavy in build, with a short, broad face, and a flat profile.

3. The Solutr  Caverns of France preserve paintings made by ancient savages of a small stout, chunky, bearded horse, rather like a long, low Iceland pony, with a short broad face, elk-like nose, and low-set tail, rough-haired towards the root. He stood from twelve to thirteen hands in height.

From these three forest varieties our draught horses are mainly descended ; but there were also in Ancient Europe two other species besides that of the woodlands.

A. Siwalik type. A fifteen-hand horse, lightly built like the modern thoroughbred. The forehead recedes at an angle from the line of the face, and there is a prominence between the eyes. The limbs are long, withers high, and tail set on high.

B. Prejevalski Tarpan steppe type, the Dun of Northern Asia. The face is long, narrow and straight. The nasal chambers are large, causing a Roman nose. The limbs are clean, with close hocks and narrow feet. Height twelve to thirteen hands.

We must think then of such types as the Forest and Siwalik adapting themselves to the soils of North-western Europe.

PART VII. THE CHANGING LAND.

The North Sea is only a recent flood in an old river valley. We must consider it not as a tract of permanent water, but as a lost hunting ground of our own ancestors, a pasturage for horses not very long ago.

In the year 5200 B.C. the Scandinavian glaciers, shrinking at the rate of about one mile a year (the rate of shrinkage in the Alps of St. Elias), withdrew from the province of Finland and the Baltic Lake. Let us suppose that, in that year a traveller from civilised Egypt made his way down the Rhine, and so entered the valley of North River, which is now flooded by the North Sea. At first this river wound its level way between low chalk downs, but presently the Thames came in from the West, and forested swampy claylands extended northward. Abreast of Aberdeen came the last chalk downs, and beyond that lay Arctic tundras where the delta widened to an ice-drifted sea nearly abreast of Faroe.

The whole valley was as varied in rock and soil as Eastern England, with little lakes, ridges of boulder clay, and downs of gorse and bracken. Northward across this verdant land crept succeeding waves of the fir, the oak, and the beech.

Out on the delta coast, far to the right, beyond a deep sea channel, rose the white Ice-cap of Sweden, whose Ice-flood filled the Norway fjords with berg-breeding glaciers. Far to the left rose the ice-clad Grampians.

The Delta people and those of the Baltic Lake were poor savages living upon shell fish, and making mounds of shell refuse round their hearths. Inland were stronger peoples who had lake villages or trenched encampments on headlands of the downs.

As the grass followed the advancing fir woods, the primitive stock of Cloudland returned to pastures from whence it had been driven by the cold. These were not Duns, Bays, or striped, but native Cloudland horses adapted to this region of little sunshine. Strong Dun was not needed to guard them from the actinic rays of sunlight, so their dull colour had yellowish, brownish and reddish tones which blended with the landscape, such colours as are worn by the Celtic ponies of Britain and other Atlantic isles.

The wild horses were evolving three utterly different types. On the chalk downs, and on the limestone tracts north of the Humber, there were lightly built, slender, graceful horses of fair height. On the clays there were

horses, heavy, coarse, and slow. On the Breton, British and Scandinavian moors there were Celtic ponies.

It needed but little sinking of this land to flood the Delta, and open a long channel up the North River valley. The sea washed out the clay foundations of the forests. The sea breakers wielded boulders of the glacier-drift and hurled them like battering rams against the dissolving limestone of low cliffs. The tide swung gravels to tear out bays in the foreshores. Winter frosts cracked the headlands, and summer rains melted the ice cracks so that the capes fell into the sea in landslides. Thus the sea widened, biting its way deep into Europe until men began their losing fight with dykes for the saving of doomed netherlands. The North Sea cut its way through chalk downs into the English channel. The tribes who held fortified headlands of the chalk downs and set up temples at Stonehenge and Avebury on the mainland of Europe, about 1800 B.C. found that their country had become an island.

The old horse pasture of North-western Europe was split into sundered provinces by the advancing sea, but the breeds, native to a lost valley are still almost identical on either shore. The Breton and British moors have

one type of Celtic pony whose ancestral range extended across the Straits of Dover. The clay fens of Lincolnshire and of Holland still have draught horses alike in build and in colour. The limestone districts north of the Humber have the same tall horses as the similar provinces across the water in Schleswig, Holstein and Jutland. The granitic lands of Scotland and Norway have one type of the Celtic pony. (Low's Domesticated Animals.)

It is none of my business, but I cannot help feeling that the flooding at about the same period of the Lower Yukon and North River Valleys is something more than a coincidence. The Geological people are always cocksure that the sea cannot rise, that an hemisphere—the Southern, for example, cannot be flooded, and they assume quite blandly that lands have sunk, without explaining why. Their theories never seem really to fit that mighty wilderness, to which I have seen them come as visitors or strangers. Science will never understand until it learns to love.

PART VIII. THE HUMAN INFLUENCE.

We have now reached a stage of the argument which shows for Europe no continental type like the Bay or the Dun, but a horse stock of varied colouring, of diverse heights and

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builds, and most curious dispersions as native to the green pastures of Cloudland.

The problem in nature was intricate as a jigsaw puzzle, before man's interference broke that puzzle into little pieces. Our ancestors were not such fools as to import Duns from Asia for purpose of breeding, but in their wars and migrations drifted Asiatic Duns and South Russian white horses across the face of Europe. No wars of invasion brought Bay horses out of Africa ; but as each tribe needed a better strain of horseflesh, the Bays were carried in the courses of trade to Europe.

THE HUMAN INFLUENCE IN CROSSING HORSE STRAINS.

THE CHESTNUT. This colour is possibly bright Bay from African blood crossed with a slight proportion of golden Dun. Both in the humans and the horses, chestnut hair goes with a certain temper described as sanguine, generous or fiery if we happen to be in a good temper, or untrustworthy and vicious if we dislike the person. Setting aside the cold sorrel, or light chestnut, which in my own mind is associated with commonplace horses and with one or two very bad women, the real chestnut, with its red-gold glory, makes most of us catch our breath with its beauty. In human

hair it so appeals to artists as to be generally reserved for the most sacred portraiture. In horses, it so appeals to horsemen as to rank next bright Bay in the scale of values.

THE BROWN HORSE. This is a colder, washed-out tone of Bay.

THE BLACK HORSE. Among feral and range horses, those of the very darkest bay and brown become brown-black under the summer sunlight. True black is unknown among outdoor horses, and can only be due to special selective breeding.

THE GREY HORSE. All greys are obviously crossed between white and the various whole colours.

The primary horse colours are Dun and Bay.

The secondary colours are white, black, grey, chestnut, and brown, whole colours shared by human and horse folk.

The tertiary colours are crosses of white with Bay, Dun, black, chestnut, brown, which produce the various roans. Beyond that the human hair withdraws from competition.

The quarternary colours are crosses of white with whole roans, producing strawberry and cream roans, and roan-balds ; while a peculiar mixture of white with black, bay or chestnut, gives us the piebalds and skewbalds.

The white horse has been saved from the wolves by man, but the secondary tertiary and quarternary colours are also very largely the result of man's work in crossing the primitive strains of Europe with the imported African Bay within the last couple of thousand years.

MIGRATION. The Romans imported millions of negro slaves who have not left a trace of their blood in Europe. Wave after wave of Blonde Migration from the Baltic has conquered the Mediterranean states, but left no fair descendants. The negroes become extinct in Europe. The blondes become extinct on the Mediterranean.

And so with horses. Imported horses fail to breed healthfully in the damp provinces of India and Brazil, while horse sickness makes a clean sweep of them in many parts of Africa. It is probable, with horses as with men, that no sudden importation to regions outside their native zone of sunlight results in permanent healthy breeding. The imported strain dies out unless it is constantly renewed. Hordes of Asiatics with Dun horses have swept from time to time into Europe, and into India, but Dun horses are scarce in both regions, and do not exist in large numbers except in Scandinavia and in Katywar.

So the strong action of man in sudden floodings of Europe with Bays from the desert, Duns from the steppe, is outweighed by a stronger law of nature. With strains of horses as with tribes of man, the penalty for sudden migration from their native zone of light is gradual extinction.

Yet is there one difference between Bays and Duns. The Dun is not worth renewing, and so dies out unnoticed. The Bay is worth breeding and so persists.

PART IX. THE BRAND OF EUROPE.

In nature's immense and gentle processes, throughout the amazing story of the Europe horse, the bewildering actions of forgotten tribes of men, and the sun's own slow adjustments, a single force persists in branding the stock with a sign of ownership.

A partial eclipse of the sun had made his figure that of the crescent moon. Standing under some oak trees, beside the road puddles made by recent rain, I noticed that the bars of reduced sunlight which came down through the leafage shone upon the little patches of water. The image of the crescent sun was reflected upside down.

The bar of sunlight coming down through leafage acts as a lens to the sun's image. The

woodland glade is a camera. The coat of a woodland animal is coloured by the direct action of light, is sensitive to light, is a sensitized film for colour photography. To the peculiar reversed and condensed rays shining through leafage into the woodland camera, the coat of the horse responds, forming rings of deeper colour limited to the parts of the animal which are exposed to direct light. In the course of many generations, the rings become permanent and are known as dapples. The dappling in the dappled light of woodlands gives concealment both to hunting leopards and to hunted horses.

Since dapples have not been traced to any other country, and may well be native to woodlands of Western Europe, it seems fair reasoning which gives that special quality of colour to a type we will now define as the European horse. I do not contend that the woodlands were more extensive than the open downs, or that any large proportion of European horses developed dapples. I do contend that a certain stocky build and well conditioned heaviness of type more or less dappled is characteristic of Western Europe, just as a more or less striped Dun is typical of Asia, and more or less striped Bay typical of Northern Africa.

I am nothing more than an old rough-neck. My poor little theories about the Europe horse have the impudence to contradict a great authority. Professor Ridgeway brings historic proof that the Tarpan, who is the Prejevalski, the wild Dun of Asia, inhabited the green pasture of Europe, that he was a small scrawny and foul-tempered person unfit to ride, and that his crossings with the slender imported Bay produced our gigantic sturdy and gentle draught horse. I have ridden so many Duns, packed so many, loved them so much, that I am sure they would agree with me in bucking hard against Professor Ridgeway. I do not believe that the Dun wore his tawny colour in green pastures where he would be a target. I do not believe that the wild Dun in an average district was small, scrawny or vicious. I do not believe that a horse of the Dun type could be an ancestor to draught stock. History is the lens through which we see the past—out of focus.

Against the evidence of history and the proofs of science, I have nothing to offer except the common heritage of sight and reason, with that experience which trains a fellow to interpret landscape and to care for horses. I cannot expect others to ride as I have through

the green pasturage of Cloudland seeing as I do under the combed, trim countryside of to-day the fierce rough wilderness of prehistoric times and of outlandish frontiers. It is not by asking the way or reading sign-posts that one reasons out the route of a day's journey, but by a vivid sense of light, form, colour and atmospheric distance, the old familiar structure of the rocks, the slopes of drainage, the course of running waters, the shape of woods and trees as fashioned by the wind, the ancient dangers deflecting trails and roads, and the phenomena which result in forts and churches, villages and towns.

So one senses the radiant perfumed land and sees how it shaped and coloured its native horses. It was from that raw material the breeder wrought just as a sculptor models clay into his statuary. Under his hands the wild traits disappeared, the short-sighted pony grew into a long-sighted hunter, sound hoofs and limbs were softened to unsoundness, the language of signs gave place to understanding of human speech, while discipline of the harem and the herd became obedience in the fields of sport, of labour, or soldier service.

I would not have my reading take the place of thinking, but rather use books to inspire

thought and be thankful to them for correcting blunders. Thus, aiming at the truth, no matter what I hit, I see in Western Europe a horse-currency which is of striped extraction, and, like a coinage in bronze, silver and gold, has evolved its moorland ponies, its lowland draught stock, and its upland running breeds. The measure of Bay blood stamps out its values ; and, where one can decipher a device, it is to read the dapple sign for one of the sun's own kingdoms.

CHAPTER III.

HABITS OF OUTDOOR HORSES.

I. THE RANGE.

The North American range of the run-wild herds enlarges northward out of Mexico and covers the region between the Mississippi and the Pacific Ocean up to the edge of the Northern Forest in Canada. This gives an area of three million square miles, a range much the same size as Europe, the United States, Australia, Brazil, or Canada. The eastern half is a prairie, the western a desert shaped like a swell of the sea about eight thousand feet high at the top, and laced all over with a skein of mountain ranges thrown like fisherman's net and broken all to pieces. Moreover, the southern or higher half of this desert is cleft to the roots by sheer abysmal chasms known as the Cañons.

It has been my good fortune to ride from the edge of the Canadian forest along the general line of the Rocky Mountains to a place just

twenty miles south of Zacatecas in Mexico, which is the southern boundary of the Stock Range, on the Tropic of Cancer. I have also ridden from Regina in Saskatchewan to Red Bluff in California. These two routes cross the grass from north to south, and nearly from east to west, making a rough total of seven thousand miles.

The land as I knew it first had just been stripped naked by the hunters who swept away almost the whole of its native stock of bison, deer, and antelope, wild sheep and goats, together with the hunting animals, such as wolves and panthers who earned a living there. The land as I saw it next was overstocked with ponies, cattle and sheep, so that the grass was poor. The land as I saw it last was being fenced, watered and ploughed by pioneer settlers. In thirty years I witnessed the passing of the wilderness and its frontiersmen.

A meadow gives a totally false idea of the herbage which built up the strength and vigour of the ancient pony herds. It is a mixture of many grasses and other plants all closely turfed together so that a horse cannot readily select what he likes best. The grass contains a deal of water, stays green throughout

the year and tastes sour between the teeth. One finds turfed pasture in forests and their outskirts, and usually where there is rainfall enough for crops, as in Western Europe and on the eastern half of South Africa. That, I think, is not the pasture which made the hardy range horse.

Where there is less than eight inches of rain one finds the range grass, of separate plants with the bare earth between. The three American kinds are the bunch grass of the hollows, a tall tussock with tap roots reaching down to moisture ; the little buffalo grass from two to four inches high ; and the gramma grass of the same size which inhabits Mexico.

One may presume that the tussock fed the oldest herds and that, as it failed, the pony took to eating the shorter grasses.

The horse in a meadow pasture does not eat the ranker growths, but grazes the shorter, smaller kinds of grass. From this we may reason that the little buffalo grass of the ranges is the typical food of the species. The leaves of this plant are green in the spring but soon cure to a golden tawny colour, which changes to brown in the autumn, and a washed-out, greyish brown in winter. As they cure, the leaves curl downwards one by one until the

plant becomes a ball or tuft exceedingly springy underfoot, sweet as a nut in taste, and equal in food value to standing oats.

As one approaches the desert the land is sprinkled with bushes which protect themselves from being eaten with a very strong nasty taste, or deadly thorns. Of these the sage brush comes first, a thousand miles wide, followed by a thousand miles of greasewood and acacia varied with forests of cacti. The grass becomes more scanty as one forces a way onward into the heart of the desert, where there are regions of naked rock and belts of drifting sand.

As the annual rainfall varies from year to year the desert tracts expand or shrink by turns. As the winds swing from side to side, or wax or wane in their supply of moisture, a fertile region is made desolate for a few centuries as Palmyra, or a desert shrinks before the spreading pasture. In cycles the desert blossoms or withers, but with the millions of years it slowly widens.

Such, then, were the conditions of the stock-range to which the ancient herds had to adapt themselves, learning to dispense with the shrunken meadows, and make the most of varying crops of bunch grass.

The taste for green pasture is so far forgotten that range horses will swim rivers and break fences to escape from the richest of meadows and get to the desert hillsides which seem to grow nothing but stones. Where sheep tear the bunch grass out by the roots and leave stark desert, the horses' lips and teeth are so delicately adapted to this feeding that they never uproot the plant.

It is a sound rule that range ponies do not travel beyond their necessities of grass and water. Leaving the water, they graze outwards, forming a trampled area which widens daily as they feed at the edges. So, riding across the rich and untouched grass lands of the south-western deserts, I have come to a line where the pasturage ended abruptly, and beyond were innumerable pony tracks leading from six to ten miles to a water hole. The wild horse looked upon that ring area as the tame horse does a stable, with water and feed conveniently arranged. That was his home, and if man or the storm, or wolves drove him a couple of hundred miles away to better feed and water, he would always break back at the first chance, travelling steadily with little delay for grazing.

A horse's neck is exactly long enough for

grazing on level ground, but I never saw one try to graze downhill. Neither does he readily graze directly up any steep place, preferring to quarter along the hillside, rising very slightly.

His first rule in grazing then is to crop uphill.

But the moment the air stirs he applies his second grazing rule, which is "feed up wind."

If he had the man's way of reasoning, he would argue thus, "If I graze down wind I smell myself, the grass, and the dust. But if I graze up wind I get the air clean to my nostrils, and can smell an enemy in time to fight or run."

His third rule is to graze if possible homeward or towards shelter.

If the grass is plentiful he feeds quickly, and has time for rest on warm sheltered ground or in the lee of timber. If food is scant, he gets no time for rest.

On the natural range there are hollows to which the surface waters have carried the ashes of burned grass. These alkali licks are needed to keep horses in health ; but rock salt in the stable seems to meet their wants. Failing that they will lick brick walls. Even the licking of a man's hand is a means of getting salt from the skin rather than making love.

II. BETWEEN GRASS AND WATER.

The best way to measure the distance and the sort of ground which the ancient herds were accustomed to traverse between grass and water, is to study the conduct of a horse in dealing with steep places.

I was dining with some friends at Gibraltar when the story was told of long ago times when a couple of mad midshipmen rode ponies for a wager up the Mediterranean stairs. This is a stone stairway up the eastern wall of the Rock which is sheer and some thirteen hundred feet high. The story had special interest for me because my father was one of the two mad middies. He had told me that the ponies were not frightened, except at the last flight of all when the Atlantic wind was blowing into their faces over the summit. There a step was missing, the ponies reared, and both riders had to dismount, losing a wager for which the leader had undertaken the ride.

The ponies were Spanish, of the type which re-stocked North America.

I frightened an English horse into hysterics with such small rock walls as I could find in Wales, but have never known an American range animal to show very much alarm. My worst climb was made in twelve hours, with

three horses up a 3,600 foot cliff where a trail would have been a convenience. The pack and spare horses pulled hard at times because, although ambitious animals, they would have preferred some other way to heaven. That is why the lead rope got under the saddle-horse's tail, which made him buck on a ledge overhanging blue space where there really was no room. A little later the led horses pulled my saddle horse over the edge of a crag. I got off at the top, and the horse lit on his belly across a jutting rock about twelve feet down. He thought he was done for until I persuaded him with the lead rope to scramble up again. Near the summit the oak and juniper bushes forced me to dismount, leading the horses one at a time under or round stiff overhanging branches on most unpleasant ground. They showed off a little because they wished to impress me, but I found out afterwards that horses or even cattle, held at the foot of that cliff until they are hungry, will climb to the top for grass. The place is known as The Gateway and leads up out of the Cañon Dolores in Colorado to the Mesa la Sal in Utah.

Much more dangerous was a 4,000 foot grass slope down from the Mesa Uncompaghre into the Cañon Unaweep. I managed that by

leading the horses and quartering the slope in zigzags. I was much more frightened than they were.

Many times I have ridden along the rim rock of cliffs of any height up to a mile sheer, and so far from being afraid, I found some horses preferred the very edge. One may ride slack rein where one would never dare to venture afoot.

But although range horses like cliffs, they are poor climbers. One may ride them up any place where a man can climb without using his hands, but they will never face a step above knee high. Sometimes I have been obliged to pass my rope round a tree and pull my horse down walls that he dared not jump. Even then he would argue the point.

American railway bridges have no pathway, and when one leads a horse, stepping from tie to tie, he thinks he has five legs. With two legs down, and a train expected or a bear sauntering ahead, he looks so damned patient that one begins to realise an obscure trait in his character which needs explaining. It is easier to take him across bridges than to ride or lead him through a waterfall. He prefers a waterfall to a corduroy-timbered swamp road when it happens to be flooded and afloat. I have tried him with quicksands and moss

holes and glare ice on the mountain tops. Because I cannot swim I have stayed in the saddle swimming lakes, rapids, and rivers which run sand. Still worse are beaver swamps under a tangle of deadfall timber, and old avalanches. All these and sundry other kinds of evil ground a horse accepts as fate so long as he trusts his man. It is not his business. It is the man's affair. One begins to think that, like a savage, he lacks continuous purpose of his own and is merely the meek victim of his destiny. And that is exactly where the man is fooled. When a horse really wants grass, water, or to get home, he rivals the white man in sustained purpose, and does his own job with an intelligence and courage which he never gives to that of his employer. In other words, the difficulties of travel between grass and water gave to the ancient ponies the highest possible qualities of endurance, valour and skill. These qualities are latent in every horse.

There is a more important lesson to be learned by practical study of wild range.

The range has two types of herbage, the bunch grass and the thorned or aromatic bushes. The bunch grass is the staple food, the bushes a reserve in time of drought. The use

of the reserve food has taught the horse to adapt his stomach to a change of diet.

Compared with farm land the range has very little food to the acre, supports only a small population of grazing beasts, and, in its distances between food and water, has trained the horse to a deal of exercise as well as to endurance of thirst. On the other hand the needs of travelling for water and of grazing have reduced his time for sleep to about three and a half hours per day, which he takes standing, however weary, unless he is quite confident as to safety and kind treatment. In brutally managed stables horses are apt to sleep standing, because they are not off guard.

At first glance, too, the water on level range, however distant from the edge of grass may be safely visited. Yet as one approaches the stream by slopes of the usual coulee, densely bushed with poplar and wild fruit trees ; or, coming down open grass, enters a grove of cottonwood along the level bottom, one begins to note that the horses appear to be nervous. A bunch of loose ponies will let the wisest mare scout ahead while they string out in single file to follow all alert, picking their way most delicately, pointing their ears at all sorts of smells and sounds, and glancing backward

often as they go. Again one watches tame horses watering at a trough, always alert, on guard. If one of them makes a sudden movement the rest will at once shy backward. Some horse are so nervous that they have to be watered singly. Always a horse drinks while he can hold his breath, lifts his nostrils to breathe deep and fill his lungs, then takes a second drink, perhaps a third, and turns away abruptly. There is no lingering at the water-side. At the bank of lake or river no range horse goes deeper than he need, or offers to take a bath.

Here are race-memories of mortal peril from a daily watering in face of instant danger and of sudden death. I have seen so many horses piteously drowned in moss or mudholes that I understand why they tread cautiously as they approach wet ground. The bush beside the water is apt to be full of snakes who come down as horses do, to drink in the gloaming, and are not easily seen. The bush beside the water is the lurking place of every beast of prey, and everybody knows how horses go stark mad at the smell of bear. What chance had the ponies, strung out on a bush trail, against grey timber wolves? What thoroughbred fighting horse would ever have a chance against the

Siberian tiger, or the African lion? Cougar, puma, jaguar, leopard—the cats of all the world with their sudden spring at the withers or throat of a range pony, have taught his descendants their art of self-defence. That, we must deal with later.

III. THE FAMILY.

We have broken up the family life of our horses, and are apt to forget that they ever had private affairs of their own.

Twice on the range I have met horse families. On the first occasion the family happened to be grazing near the trail as I passed. The stallion was furious at my intrusion, trotted up to me and stood glaring, pawing the ground, his great neck arched and splendid mane and tail rippling astream in the high wind. My saddle and pack beasts, a pair of gentle geldings, were rather frightened, disposed to halt, even to run away but for my voice keeping them to their duty. The stallion's mares had stopped grazing to admire their master, each with an observant eye cocked at me and an expression of smugness not to be beaten in any Bigotarian chapel. Then, as I laughed, the stallion, with a loud snort of contempt, swung round, lashed dirt in my face for defiance, and trotted off to round up his harem and drive them out

of reach lest my evil communications should corrupt their morals.

On the second occasion I took a half-broken pack-train into a pasture on the bench of a cañon, so that the spring grass might cure an epidemic of strangles which had killed seven and sorely weakened the rest. The pasture belonged to a wild stallion who lived there with his family of young mares, colts and foals. He stole my twenty-five mares, added them to his harem, and made off. I was obliged to build a corral, round up the whole bunch, cut out my mares, and drive the harem out of the district. Meanwhile my stock had lapsed from civilised ways and become wild beasts who had to be broken all over again before it was possible to use them for pack-train work.

They say that a horse family depends in size upon the powers of the strongest stallion, who rises to command by fighting and defeating all competitors, and holds his command by single combat with the leaders of rival families who try to rob him.

The commandant stallion is able to hold a family of fifteen to fifty head, but there must be some who by conquest of rival leaders, and stealing of their harems, rise to commands on a much larger scale. Ranging his family

between grass and water, he is most particular to close herd his mares, to hold his own pasture which he never leaves except under dire stress, and to have special places where he casts his droppings. In range life the geldings have separate families, and their own private runs.

There is not very much known about the internal arrangements of wild harems, but a good deal can be guessed from watching the Red Indian's pony herd, the Cow outfit's bunch of remounts, the Mexican remuda, the Argentino tropilla, the stock of a horse ranch, or even a herd camp of Mounted Police, all units of horses living more or less the wild life of the range. From these it is known that a feral pony herd keeps a certain military formation while grazing, with the weaker animals ringed by the stronger, and a few vedettes and flankers thrown out to watch for danger. At the assault of a wolf pack the formation closes, the fighting horses and mares making an outer ring, close-set and facing outwards. When a wolf comes within range, the nearest horse swings round and lashes out with the hind feet to kill. As American wolves only pack in winters of famine this event is rare, but in one case an Indian boy who was herder to a Black-foot tribal camp, was, with his mount, placed

by the fighting herd at their centre for his defence, and was able to watch the whole battle until his people came out to the rescue.

In breeding and fighting the Commandant stallion is sole authority, but it has been noticed that some wise old mare usually decides the time for moving and leads the marches.

It is said that a foal is able to keep with the travelling herd from the day of birth. It is said that the foal will outlast a hard day's journey—and dies afterwards. To what extent this may be true I have no means of knowing, but I believe that the leggy foal does keep up with a moving herd. It is one more bit of evidence as to the desperate emergencies of drought or storm survived by the ancient herds.

IV. SELF-DEFENCE.

There is a general belief among horse that man is vicious. If he were a little more intelligent we could explain to the horse that appearances are deceptive, and that we are not really vicious when we throw things at each other such as shells, torpedoes and bombs, or lay mines to blow each other to pieces on land or sea. As it is, he bases his belief that we are vicious upon our methods of dealing with him, in the use for example, of bearing reins, of

branding irons, and instruments which dock tails.

My own impression, after many years of experience with both, is that man, and especially civilised man, is much more ferocious than the horse. May I venture then to quote the wisdom of a gentle Bengali Baboo who wrote an essay as follows :

“ The horse is a highly intelligent animal, and, if you treat him kindly, he will not do so.”

The discovery was made in Arabia, also in Kentucky, in Ireland and elsewhere, that if a foal is handled as a pet, and so brought up that he remembers nothing but kindness and constant care at the hands of men, it never occurs to him that he needs to defend himself from his master as from an enemy. He never develops the arts of self-defence. As a colt he learns that to get at his feed he must jump over a stick on the ground. As he grows the stick is raised inch by inch until jumping over it becomes a part of his accomplishments in which he takes a natural pride and delight. So with the rest of his education. Horses can learn a great deal of the language we speak, to enjoy music, to select colours, to add up figures, to take a vivid interest in sport, to share with us the terror and glory of battle.

They will set us an example in faithfulness, in self-sacrifice, and every finer trait of character.

But if we teach a young horse nothing but distrust, making fear and hatred the main traits of his character, it is the last outrage upon common sense to call his honest methods of self-defence by such a name as vice. We have the power to raise up angels or devils, but if we breed a horse to be a devil, we cannot expect the poor beast to behave himself like an angel.

Horses vary in character almost as much as we do, and there are with them as with us a small proportion of born criminals whose warped or stunted brains cannot be trained aright by any means we know. What we do not and can never understand is the mysterious power of saints who charm wild men and beasts to tameness, and of certain horsemen to whom the worst outlaws are perfectly obedient.

Among ourselves there are certain dreams such as the falling dream, the flying dream, and that of being eaten by wild beasts, which are supposed to be race-memories dating from the time when man was a forest animal like an ape, before the immortal Spirit entered into his body.

Among horses there are race-memories dating from ancient times in the wilderness when

the pony was driven to self-defence on pain of a violent death. These race memories take the form of habits, and explain the various methods by which the horse defends himself from human enemies.

Pawing, for example, is the subject of many theories. Not that the habit really needs explanation, because we fidget ourselves when we have nothing better to do. Yet when a horse paws the water at any drinking place, the learned are apt to say he does it to clear away the mud. I doubt if any horse is such a fool. Other observers note that the action is really stamping, a motion of race-memory dating from the time when thin ice had to be tested to see if a frozen river could be safely crossed. That sounds most reasonable, until one wonders dimly how it accounts for either pawing or stamping on dry ground.

If then the fidgets must be explained by any theory of race memory, one would suppose that the gestures used in killing snakes or in scraping through snow to get grass might very well have come down through the ages. I think though that if I had four hoofs and an irritable temper, I might be allowed to indulge in cow-kicking or striking without my symptoms being used as a pretext for abusing my dead ancestors.

We have seen that the old range harem adopted military formations, and went into action well organized for defence against wolves. They kicked, but any range cow, addressed on the subject of milking, without hereditary training as a kicker, can give points to the average horse. Yet where the cow is merely obstinate the horse is reasonable.

He is marvellously swift as a critic of the horseman, ready to kick the same abundantly at the slightest sign of ineptitude or nerves, or to render a cheery obedience to one who understands. The man who walks nervously through a stable making abrupt movements to avoid possible heels is sure to be criticised with contusions by any horse with a decent sense of humour. Yet if one understands the signs of thrown-back ears and balancing in readiness for the kick, one has only to tell the animal not to play the fool, then watch his shamefaced grin at being found out. It is so easy to charm the most irritable horse with a little hay while one is busy with him in the stall. He cannot, like a man, think of two things at once, and in military stables, horse-masters who have their grooming done while the horses feed will find that even dangerous kickers become gentle. That is of course contrary to much theory and

more army practice ; yet it is not forbidden, and being easily tested is well worth trying before it is condemned.

Having nearly cured my horses of kicking, I am still extremely anxious to persuade young horsemen to get as close as possible to a horse while grooming him, so that no kicker has room to deliver the full force of the blow, which may be fatal. Horses are very careless among themselves, kicking each other for fun while they forget that the iron shoe may break a leg. I have noticed also that a horse who deliberately gets himself disliked will very soon be the victim of organized attack, a comrade being told off by the rest to lay for him. In this way during the last six months I have been obliged to have four horses shot for fractured legs.

Horses in pasture will often stand in pairs, head to tail abreast, so that each with his whisk of tail can keep flies from the other's face. One will nibble and lick along the other's neck and withers out of kindness, adding a bite or two for fun. So in the stable, horses bite one another for fun, but if they apply the treatment to a man it is a sure sign they are badly educated, and liable to get their noses smacked for their pains.

PIG-JUMPING is the plunging action which civilised horses suppose to be genuine bucking. It is not so much self-defence as an expression of joy.

KANGAROO-JUMPING is unusual, but must be great sport for a horse who knows the trick. It never fails to astonish.

REARING. To cure a rearing horse, throw him on his near side. When ready to throw, draw the rein taut, the off rein tightest ; then as he rears, keep the left toe in the near stirrup, but get the right free of the off stirrup with the knee on the horse's rump, for a purchase as you throw your body suddenly to the left. The Horse loses his balance and crashes to the ground while you step clear. As you do so draw the taut off rein back and low to the pommel. So you will raise the head and prevent horse from rising.

Never strike a horse on the head for rearing.

BOLTING AND STAMPEDES. Horses were trained by wolves and other dangers of the range to run at the warning neigh of their stallion commanding. Sudden and blind panic is a trait innate in the horse character, and the best preventive is the human voice. Singing hymns or any familiar songs in chorus is the very best way of preventing a stampede ; but,

judging by my own voice, is rather apt to panic any horse who has a good ear for music.

BALKING. There is a story of a New England farm horse drawing a load of hay, whose master had no influence with him. After trying for an hour to persuade the animal to move, he made a bonfire under its belly. When the flames caused him discomfort, the horse moved on—eight feet, exactly enough to bring the bonfire underneath the hay.

Tap quickly with a whip behind his knees, hitting them alternately. He will mark time then walk to get away from the whip. I heard lately of a stranger who walked up to a balking horse, rolled a cigarette paper and placed it carefully in the animal's ear, then led him unresisting along the road. Mr. Horse was wondering, "Why the deuce did he put that thing in my ear?" He forgot to balk. No horse can think of two things at the same time.

BALKING AT A GALLOP. Whereas refusing to start is evidence of a misguided past, the sudden refusal to take a jump may indicate that the horse lacks confidence in his rider, or that the reins are very badly handled, giving him no chance of taking off with head free.

To balk at a gallop means throwing the body back and bearing against the ground with all four feet, head down.

PROPPING. This is balking at a gallop and taking a series of springs in that position, each with a rigid crash on all four legs. The rider has a tendency to continue his journey alone. Propping is much favoured by range horses.

This completes the list of defensive measures remembered by civilised horses.

TREADING. They have also invented a few methods of expressing their feelings. When a horse presses his hand on my foot, and adds to the tenderness of the greeting by waving his other hand, I know he means to impress me, although I may not have leisure at the moment to hear what he has to say.

TAKING IN THE SLACK. When a horse takes the seat of my breeches firmly between his teeth as I try to mount, he may not wish me to ride, or possibly he wishes to criticise the English riding costume. Breeches with puffed sleeves are perhaps an acquired taste.

CROWDING. A horse may corner or crowd me when I try to leave the stall after feeding him, and if he hugged me he could do no more to express his pleasure. But if he will not let me re-enter his stall while he feeds, I suspect some

groom has been stealing his oats from the manger.

JOGGLING. Soldier horses on the march are obliged to keep the pace set by the leading file. If that pace is beyond their walk, they keep up by joggling. To break a joggling horse to a walk, stand in the stirrups, place the free hand on his neck, and bear with the whole weight of your body.

To return now to defensive methods.

BUCKING. To lower the head, and spring into the air, humping the back, drawing the feet close together, and coming down on all four rigid, for the next spring. Repeat. It is useful when starting a spring with the head north to twist in the air and come down facing south ; or to make the series of jumps in a narrow circle and then bolt at a tangent ; or to buck on the run, dislodging the rider first, then the saddle which can be kicked to pieces. If the rider is dragged his brains can be kicked out.

SUNFISHING. To buck, coming down on both hind feet and one fore, while doubling up the other free limb. This brings one shoulder to the ground, and to sunfish is to drop alternate shoulders. Very few horses know this exercise.

SCRAPING. To run or buck under low branches or against trees or walls. Some civilised horses know this.

BACKFALLS. These may be used to add to the general effect of either rearing or bucking. I once bought a black mare seven years old, snared in the forest, who had probably never seen a man. When ridden she bucked, and while bucking threw herself seven times on her back, three falls being over a cut bank on to a rocky river bed. Towards evening she cricked her neck, and showed blood at the nostrils, making an awful picture of despair. During the night she slipped a foal, of which there had been no sign. Before dawn she died—a case of broken heart. The horse breaker, an English gentleman, stayed with her throughout, and was not hurt.

So far we have dealt with acts of hot-blooded passion, culminating in suicidal rage. The fiercest buckers, having dislodged the rider, will turn at once to grazing and wait with cheerful defiance for the next bout. Almost all horses are sportsmen and there is nothing that they dread more, or are so careful to avoid as treading upon a disabled man. Even in cavalry charges a man down has only to lie still so that the horses can see exactly where he

is, and they will all leap clear. They dread placing a foot on anything which might collapse or roll, and so cause a dangerous fall.

There remain extreme cases in which horses are guilty of deliberate, planned murder.

SAVAGING is practised by civilised as well as by range horses. It is a sudden, and often unprovoked, wide-eyed staring rush with teeth bared, an attempt either to inflict a dangerous bite or to get a man down and trample him to death.

HOLDING WIND. The only case I know of was that of a fine buckskin gelding for whom I paid a rifle, a suit of clothes and ten dollars in trade with an Indian. It seemed impossible to get the girth properly tight until, after three days, I concluded that my suspicion of his holding wind was merely foolishness. All the same I used to regirth a mile or two out on each march. I had regirthed at the top of a mountain pass, and was mounting, when he suddenly let out all his wind and bolted over rock heaps. The saddle came down with me on the off side, I was dragged, and afterwards woke up to find myself maimed for life. Then we had a fight, which he won. It turned out afterwards that holding wind until he could catch out and kill his rider was an old accomplishment for which

the horse was famous. This is the only case I have known of unprovoked, carefully planned, and deliberate crime, as distinguished from self-defence.

Vices are human qualities. The worst possible vices with regard to a horse are,

To show fear.

Meanness or neglect in fending for him.

Cruelty or ill-temper.

V. THE SPIRIT OF THE HORSE.

The young of the church and of the universities who know all about everything, and attach a deal of importance to their funny little opinions, are quite agreed that the lower animal is an "it" as automatic as a slot machine. Put in a penny and the machine utters a box of matches. Put in food and the animal develops energy. So much is perfectly true of animals and men, for our bodies are automatic.

Moreover, the animal has "instincts" which impel "it" to beget a foal or a litter of puppies. Humans, with the same instincts are impelled to beget a bumptious young bacteriologist, or a pair of curates.

In a like way the wolf, the Christian, or the tiger mates with one wife, while the horse and the Moslem both prefer a harem.

Shall we say, then, that the wolf is the more religious, or the horse not quite so respectable ?

A certain Sergeant Parker, of the Northwest Mounted Police, went on patrol with a saddle horse. They got lost in a blizzard, and in the succeeding calm the man became snow-blind. On the seventh day, the horse saw an outfit of freighters passing in the distance. He ran to their sleighs. He whinneyed to the horses, who understood his talk, and he beckoned to the men, who were not so clever. Then the men noticed that his belly was terribly swollen by long pressure of the girth. They followed him. At a distance of one and a half miles they came to a tract of prairie with the snow grubbed up where the horse had been scratching for grass. In the midst was a heap of snow like the mound of a grave, on which lay Sergeant Parker in seeming death. His long delirium, beginning with visions of angels and closing with a dream of meat-pies, had ended in coma just at the verge of death ; while the horse stayed on guard until it was possible to get him rescued. So much was told me afterwards by the man.

The other day in France a British soldier was killed, whose horse remained with the body for two days, out in the zone between the

opposing armies, exposed to a hurricane of fire beyond example, refusing to be rescued, moved by a love stronger than death.

The young of the clergy will tell us all about the lower animal who does not subscribe to the tenets of the church, and so must perish everlastingly despite the Father's care. Yet if they read the Prophets and the Revelations they will find chariots of fire, and see in visions the deathless chargers ridden by Archangels. Are all the Hosts of Heaven infantry? We have the full authority of the Holy Bible for an idea that horses may be immortal.

But then the young of science have assured us that the clergy talk a deal of nonsense, and that the Holy Scriptures are so much folk lore. Our modern teachers, unused to sleeping outdoors, have never seen the great heavens thrown open every night. They believe in nothing they have not seen, and those I meet have not seen very much. To them the lower animal is hardly a personal friend, but rather an automaton steered by instincts, built on much the same principles as a dirigible torpedo. The "instincts" have to account for deeds which in a man would be attributed to love or valour.

I often meet young people who gently wave

aside my life experience while they crush me with some religious or scientific tenet to which they attach importance. Sometimes this bias has caused total blindness, more often they lack sympathy ; but any horse can teach fellows who have eyes to see with, and hearts to understand. Then they will realise in him a personality like that of a human child.

I do believe that there are men and horses in whom the spirit burns with so mighty and secure a strength that it cannot be quenched by death ; and that there are others in whom the flame burns low or has been blown out.

Everybody has acquaintances who possess a certain sense, not yet quite understood, which enables them to read unspoken thoughts ; to see events in the past, the distance, or the future as happening to their friends ; or to be conscious of certain states of the atmosphere produced by strong human emotions ; or to see or hear phenomena which some folk attribute to discarnate spirits. Such people are called psychic, and, if they use their powers as a means of earning money, they are defined as frauds. As a blind man does not deny the existence of eyesight, so, if I am not psychic myself, I have no call to decry the honest people who possess this gift. I have heard

stories told in all good faith of dogs and horses showing uneasiness and alarm at apparitions which men failed to see, of so-called "ghosts," for example, in places which had been the scene of a violent death. Without careful investigation one can scarcely treat such tales as evidence ; but it is quite possible that some horses, like some women, are strongly psychic.

That horses have a crude sense of humour is known to every horseman. To rip the cap off a groom's head and drop it in the water is the sort of joke which appeals to a horse or a little boy. Once I was standing beside a friend who sat in a dog-trap, and each of us enjoyed a glass of beer while we passed the time of day. Just for fun the pony drank half my beer, but when I brought him a bowl of the same, pretended to be an abstainer. That pony would visit his master's dining-room of a morning to remove the covers and inspect the dishes for breakfast.

Another friend of mine once had a horse named Kruger, black roan with a white star on each flank. It had been his life's ambition to be a skewbald, and disappointment had lopped both ears over a glass eye, so that he looked like the very Devil. A greyhound body, long legs and a mincing gait completed his un-

usual list of beauties. Some fourteen years after my friend had sold out and left that country, accident brought me to Fire Valley, British Columbia, and dire need of a new pack animal constrained me to buy the horse. Perhaps for political reasons, or to evade the police, by this time old Kruger had changed his name to Spot. Frightened of him at first, my partner and I discovered his great talents as a pack-horse. Besides that, he was brave, loyal, and gentle, and above all things humorous. A rough passage of mountains brought us to settlement, where men would laugh at Spot, but horses never dared. One had only to say "Sick 'em!" as to a dog, and Spot would round up all the horses in sight and chase them. His face was that of a fiend save for a glint of fun in the one eye he had for business. For about fourteen hundred miles he spread terror before him, stampeding bunches of loose horses but always coming back with a grin, as though he said, "Now, ain't I the very Devil?"

In the North-west Mounted Police, a detachment of us used to ride down bareback with led horses to water at the ford of Battle River. Close by was a wire cable for the ferry. On one occasion, my horse as he left the water turned under the cable to scrape me

off his back. Failing in that, he returned higher up the bank, and this time I was scraped off into a pool of dust. Out of that brown explosion of dust, I looked up in time to see his malicious pleasure in a successful joke.

And so one might set forth instances by the score, all to the same monotonous effect, that humans and horses have a sense of humour.

Please imagine a man to have his hands and feet replaced by boxes of horn such as the hoofs of a horse, and that, so disabled, he is tied by the head in a cell. Reduced to the conditions of horse-life in a stable, the man would be as clever as a horse in the use of lips and teeth. He would slip his headstall or break his head-rope, open the door and escape until such time as the need for food and water drove him back to prison. When asked to go to work, he might give a clever impersonation of a lame horse. He might also copy the trick of the beggar horse who gives the love call to every man who enters the stable, fooling each of them with the flattery of special homage, a sure way to gifts of sugar, apples or carrots. Or he might copy the horse who whiles away dull times by keeping a pet cat, or bird, or puppy. It seems odd, too, that the most dangerous human outlaws and man-slaying horses are

gentle with small animals and children. So long as we punish unoffending horses with imprisonment in dark cells, we may expect them to show traits of character evolved by the treatment of prisoners in the Middle Ages.

Horses, dogs, and men are oddly alike, too, in the way they dream, with twitchings of the limbs to illustrate great exertion, and snortings, murmurs and groans, which take the place of speech.

So horses just like humans are dour or cheery, truculent or cheeky, humorous or stolid, some with a lofty sense of dignity, while others behave like clowns. Some horses are like some children, exacting until they are petted, while other children and horses hate to be pawed. Both will sulk or quarrel, play the fool or grumble, make intimate friendships or bitter enemies. I think, though, that the love of sport, and the desire to excel are much more general with horses than with children.

In a military camp I asked some women to tea, and turned loose a few Beethoven records on the gramophone. At the first tune all the horses in pasture assembled at the fence, stood to attention while the music lasted, and when it was over scattered off to grass. They certainly love music. At the same camp, by

some mysterious means they got wind of the fact that twenty of them were to be sent away. Until the detachment actually marched off, their conduct, for twenty-four hours on end, was sulky and mutinous. Afterwards both groups immediately mended their manners.

Everybody who lives with horses learns that they exchange confidences, arrange for concerted action and try to tell us their troubles. Nobody knows how they talk, few of us can tell what they are talking about, but so far as the evidence goes they seem to express their feelings rather than their thoughts. Here then are a few of their signals :

(1) When a horse throws his ears to point forward and down, and he makes a short, sharp snort it means " Wheugh ! Look at that now ! " If he throws himself back on his haunches while he points and snorts, it means : " Oh, Hell ! " If he points, snorts and shies a few yards sideways in the air, he is playing at being in a terrible fright. It means : " Bears ! " He is not really frightened, for when he is tired out he will pass a railway engine blowing off steam without taking the slightest notice.

(2) One ear lopped forward and the other back, head sideways, gait sidelong, may be

defined in the words of a learned Hindu :
“ Sir, the horse with which your Honour entrusted me has been behaving in a highly obstreperous and devil-may-care manner.”

(3) The love call is a little whinney, soft, sweet and low.

(4) The demand for food is a rumbling neigh.

(5) A cheery neigh greeting other horses in passing means : “ How d’ye do ! ”

(6) A loud trumpet peal of neighing at short intervals is a demand, sometimes a piteous appeal to other horses to join company.

(7) The groan of great pain is the same as that of a man, and may be attended by crying, when tears run from the nostrils. The sound is heart-rending, beyond endurance.

(8) The scream is only uttered in sudden and mortal agony as from burning, or from some kinds of wounds received in battle.

(9) Ears thrown back even ever so slightly express anger, but thrown back along the neck mean fighting rage. In wild life the fights between stallions are mainly with the teeth, and horses forced to fight as a sport for men, as in ancient Iceland, rear up against one another, striking as well as biting. The ears are thrown back to save them from being bitten.

(10) Rage and pretended anger are expressed by a sudden squeal, the signal of attack.

(11) Gestures of pain.

Stamping is merely impatience.

Pawing may be due to colic. If also the animal sweats and keeps looking at his flank, there is certainly pain in the abdomen.

Pointing with a forefoot. When standing, a horse rests his hind legs by changing weight from one to the other at intervals of a minute. As he has no mechanism to do this with the fore limbs, he expresses pain in one of them by pointing the foot forward. He rests better facing down a slope than facing up as in a stable, and when in pain may be relieved by tying to the stanchion instead of to the manger.

Dragging the fore foot means injury to the shoulder.

Head out, chin up, feet apart, and sweating, mean that the chap is choking.

Head down and tail tucked in, mean misery or sickness.

(12) Gestures of joy.

Bright eyes, a glossy coat, head carried proudly, and tail high, dry nostrils, hard droppings, free movement, and a willing gait are signs most eloquent of health. To pass the time of day with other horses, shy at the

clouds, paw the moon, and dance, with pig jumping or even a little bucking after breakfast, are signals of youth, joy and good fellowship.

Then one may watch the play of the nostrils making a thousand comments on scents borne in the air, while the ears will point and quiver to all sorts of sounds beyond man's hearing. The mood will change from sober thoughtfulness in the shadow of clouds or trees, to sheer intoxication of delight with sparkling frost, dew on the flowers, sunshine in the skies. No creature on earth expresses feeling with sweeter quickness than a happy horse.

(13) Nuzzling is sometimes an appeal for help, more often an expression of loving sympathy.

(14) Nothing so far explains how a couple of horses will put their heads together, touch nostrils, and in a second come to some sort of mutual understanding, which leads to immediate concerted action such as the bolting of a team. In one or two cases I am not sure that the nostrils actually touched. In many cases when I saw nostrils rubbed together or the beard bristles in contact, no sound was made within the compass of my hearing. Neither were there such lip movements as would be

made by speech, nor was there any self-conscious, found-out expression in the faces of conspirators caught plotting against the white men.

When I have been in company with some very dear friend, and one of us would answer out loud to an unspoken thought of the other, or both of us were moved to say the same thing in the like words, we called that thought-transference. When my horse came to me in camp, and standing behind caressed my neck or ear with his lips or nostril trying by thought-transference to tell me all about his pain or sorrow, he might get his face slapped before I realised exactly what he said. Only as I learned to welcome horses when they came to me, I seemed to sense their feelings. They converse among themselves by thought-transference, and try to speak that way to men they trust.

The barriers between horse and man are tremendous. Think what it is for a fastidious creature, with powers of scenting which can descry clean standing water at nearly five miles without wind, to come near a meat-eating creature like a man, powerfully and offensively scented. Suffering from nausea without obtaining the relief permitted to a

man, the horse must overcome an intense dislike before he accepts our friendship. He senses our defects of cowardice, cruelty or selfishness, perhaps drunkenness, vices outranging his capacity for evil. He knows that we are physically small, slow, sometimes even lacking in muscular strength. Yet taking us all in good part, he submits his will to an intellectual force, grasp and speed which seem to him supernatural, and to an authority which he venerates as divine.

CHAPTER IV.

THE CONQUEST OF THE HORSE.

We have now some vague idea of the ancient horse ; so it is well we should know what manner of man was the savage who caught and tamed him.

Living a great deal, and travelling much alone among savages I have been more or less tolerated ; and the savage has told me what he thinks of the white man. He looks upon the scientist as an amateurish unpractical sort of person who cannot ride or cook. The missionary can be profitably humbugged. The tourist is a source of revenue but apt to be intrusive and ill-mannered. As to the cinema folk, one tribe of savages refused to play any more because they were defeated in every film. They were granted one massacre of the whites to cheer them up.

So the scientific men, the missionary, the cinema people and many others bring home impressions which would amuse the savage.

Our people are so badly informed that they suppose the savage to be dirty, ferocious, immoral and uncouth as the Sydney larrakin, the cockney rough, the New York tough and other poor degenerates of our race. It is true that the Fuegians were dirty, but we should not speak ill of the dead. Some South Sea island tribes are cheerfully ferocious, and make much of the white man at table although he does taste salty. The Pathan, if one calls him a savage, takes a delight in immorality. But uncouth? The commonality of the English-speaking nations have a deliberate preference for ugly costume and decorations, foul speech is usual among men, vulgarity is a privilege of both sexes, and awkwardness of bearing is almost universal. Who are we to call the savage uncouth? Compared with a white man, the savage is a gentleman anyway and usually sets us an example in purity of speech, often in cleanliness, chastity, and good faith. He differs from the healthier types of white men in having slightly less energy and vitality, in lack of sustained purpose and in being never quite grown up. Except in Africa, our microbes and not our valour conquered him, and his failure to rival us in material progress was due to lack of material rather than want of

brains. The ferocious savage of fiction could not have tamed the horse.

It is quite likely that men killed and ate ponies for ages before it occurred to our ancestors that the creatures would be a deal more useful alive. But how was Four-feet overtaken and killed by Two-feet? Science has nothing to say on that point. We are not told.

Science has discovered that in Western Europe there were various phases of culture which are called (1), the Eolithic, when men used natural stones for weapons, (2) the old Stone Age, when flints were flaked to make spear and arrow points, (3) and the new Stone Age, when stones for weapon heads were ground and polished, (4) the Bronze Age, (5) and the Iron Age. It is true that flaking flints for flint-lock guns continues in England in face of all theories of the Neolithic, because a flaked flint will make sparks, whereas a ground flint won't. It is also true that Europe is the only part of the world with flints for flaking. The general application of the theory is also a little difficult on the Western American range, where there are fine silicate stones; but, in defiance of the Neolithic culture, the savages persist in flaking them for spear and arrow points while they

deliberately grind stones for club heads, axe heads, and mortars. Still worse, the debauched Eskimo grind and carve stone lamps, but in their heathen blindness use bone and ivory for the heads of harpoons and bird darts. The savages I have known belonged to the Old Bone Age.

How then with his slow feet and poor weapons was the hunter to surprise the alert sentries of a pony herd, get within range before they fled like the wind, or drive a bone-tipped spear through the shaggy hair?

It seems to me that man, like other hunting animals, despairing of getting meat from a pony herd on the range, would lie in ambush near the watering places, and where the ponies had to string out on a narrow trail they were caught at a disadvantage. There spear and arrow could earn abundant meat. Outside the bush, too, the valley or cañon walls had caves and defensible places where a tribe could lodge within easy reach of game, water and fuel.

In the South-western desert of America I have seen hundreds of cave and cliff villages, some even occupied by surviving tribes whose methods of hunting and location and defence would correspond with those of the more

primitive pony hunters of prehistoric France. It seems, too, that those hairy aborigines who split pony bones for marrow may possibly have known the daintiest dish of Red Indian cookery, Crow entrail, more politely known as Absaroka Sausage.

In savage tribes there is a rule that a man of the Smith sept may not marry among the Smiths, but seeks his bride among the Browns or Robinsons. But the septs are usually called after some animal, so that for Smith we may read Pony, for Brown we may read Eagle, for Robinson say Wolf. Moreover, the children play a game of two sides in which Master Wolf impersonates a wolf with cries and dances, and if the rival side laughs they pay forfeit. So Miss Pony plays at pony, and Master Eagle plays at being an Eagle. Out of this game perhaps comes a play of the grown-ups ; in which I have seen a candidate for the secret society of the Healers impersonate his tribal Bear or Beaver before the Doctors of the order who admitted him to their circle. This play may be the origin of a mystic rite known as Calling the Game. For certain Doctors can wear a wolf skin, and give so beautiful an imitation of a wolf that all the deer and bison are deceived. His job is to excite their

curiosity so that, as he draws slowly away, the herds will follow him. The nearer animals draw back with misgiving, but those in the rear press on to get a view until, as the wolf-man gathers speed, the moving herd runs hard. It is then that they find themselves running between converging lines of stone piles, and women jump up from behind these cairns waving their robes and yelling. The herd stampedes to the edges of a sheer cliff, too late to check their pace after the leaders have seen the peril ahead. The rush of the herd drives onward into space, and hundreds, even thousands of great beasts fall headlong to lie dead or mangled in heaps on the rocks below. So the tribe assembles for great feasting, and heavy labour.

The hides were needed for clothing, shields, tents, and rope ; the brains for dressing skins ; the sinews and guts for bow-strings, lashings and thread ; the hoofs and horns for weapon points, hafts, handles, spoons, cups, window lights, and glue, which mixed with oil made a dressing for leather ; the gall for cleansing ; the hair for felting or weaving ; the fat for lamp oil and candles. The meat in large flakes was sun-dried for storage. The dried meat, pounded, mixed with berries and filled

with melted fat made pemmican, the best of winter foods.

Where there were no cliffs over which a herd could be driven, the practice of calling the game was just the same, but the narrowing avenue of stone heaps led to the gate of a ring fence into which the big game were penned for slaughter.

This ring fence has many countries, many names, being the pound or corrall of North America, jaral of Mexico, kraal of Africa, keddah of India, circus of Rome, bull-ring of Spain and old England. With the advancing ages the perching of spectators on the fence became the Auditorium of the circus, Stadium, and Colosseum, and the baiting of beasts and men, the wild beast fights, the mimic battles, and martyrdom of saints, varied the savage programme with racing, tournaments, and athletic sports

So far as our subject is concerned, however, one need only note that herds of wild animals, the fighting males, the mothers and their young of many species much too swift for men to run down in the open, were captured alive and unhurt. Among these were ponies with their mares and foals.

The pity for young animals and the love of

pets are native traits in human character, and universal among savages.

The savage hunter brought kittens and puppies into camp to be the playthings of his wife and children, and from these pets descend the whole of our cats and dogs. And in the tribal captures at the corralls were all sorts of young animals claimed by the women and children because they were not worth killing. These ponies, cattle, deer, sheep, goats and antelope grew up with human kind, glad to get shelter from the wolves at night, allowed to graze in safety outside the camp by day. If they proved useful the men were tolerant. The useful kinds were even protected at grass by boys told off as herders, to run them into camp at the first sign of danger.

The mother who ran dry of milk, saw foals getting milk from the mares, and would have mare's milk for her child. The mares who gave most milk were preferred to others. From this came the natural idea of breeding from good milch mares to improve the strain, and get a larger yield. And thus the use and value grew of mare's milk with its many preparations as a staple food for children, then of grown-ups, until the practice of herding tame horse stock became general among the hordes

of Asia. Since then it has been found that cows gave more and better milk than mares.

As the wild game migrated between their high summer range and their lowland wintering grounds the savage tribes followed in search of meat. With the beginning of the pastoral age the need was urgent of moving the flocks and herds between the summer and the winter pastures. But as yet there were no beasts of draught or burden to carry the tribal camp. That meant the keeping of two camp equipments, or maybe a camp upon the highlands to supplement the village in the lowlands ; and it was doubtful policy to leave valuable tents as a prey for marauding rivals. A larger and a bitter need arose when the tribe must move, and old folk who lacked the strength to travel must be left behind. There is nothing so terrible in savage life as the necessity of leaving old men and women exposed upon a hilltop after the tribe has moved. The poor old thing is provided with warm robes, a fire, fuel, water and some food, but as the days pass the last cinders, carefully raked together, sink to dust, and the cautious wolves close in for the final rush.

Savages love as we do, think as we do, and their life which has for us some glamour of romance is full for them of sordid realism. So

we may reckon well that some good matron grudged the loss, at moving time, of tent poles, the cutting of which had cost her heavy labour, done as it was without steel tools like ours.

She saw the tent poles left behind when the milch-pony herd moved off. She told the herders to lash a pair of her poles, one on either side of each pony's neck with the ends trailing astern. The next idea was to lash a couple of cross bars across the trailing poles behind the pony's hocks, and that was enough to keep them at a proper angle. It was easy then to lash a skin robe in position between the trailing poles and the two cross bars, making a sort of basket, something to carry the old mother, who must otherwise be left behind to perish. Here then was transport which enabled the tribe to march with its tent poles, old folk and baggage. One can imagine how the medicine men protested against so shocking a violation of the laws of nature, which decree that the aged shall be left as a meal for our hunting companions, the range wolves. But here the priests would find themselves opposed by the common sense of every man and woman ; so they would doubtless yield with an ill grace, after enacting a law that this new means of transport was a special privilege for aged

clergymen. The travois came into general use for transport.

The next step was less obvious, an idea which would appeal to men of inventive minds ; and I have noticed that it is only in civilisation that the inventor is treated as a public enemy. The savage actually admires a man with new ideas. The travois frame was a heavy drag, and the draught pony was apt to delay the march. Why not have a round log as a roller under the trailing ends of the poles ? Too heavy. Cut away the bulk of the roller, fining it down to a mere axle bar, with a disc at either end to roll along the ground. The larger the disc the better it rolled, so disc wheels were built, with a hole in the middle into which the ends of the axle bar were bolted.

As one may see in the many countries where disc wheels are used by farmers, the first idea of lightening the disc was to cut out four large holes, leaving the timber shaped like a rough cross with a rim. But that cross was too weak to carry weight, so its arms had to be strengthened with four spokes, lashed on with raw-hide ; next the four spokes replaced the arms of the cross, and a rim was built enclosed in a raw-hide tyre. The raw hide, put on wet, and shrinking as it dried, made a quite serviceable tyre. So

was the wheel invented, and the first four-spoke pattern gave place to the six and eight-spoke methods of strengthening the rim. The whole process from roller to four-spoke wheel would easily occur to one inventor in his experiments.

Meanwhile the skin basket in the travois frame was changed to a floor of raw-hide lacing, on which a man could stand with bent knees driving. He needed shelter, so a dashboard was made of oiled bull-hide, quite translucent but proof against spears, arrows and pony kicks. As a curved surface made weapons glance when they hit, this dash-board was rounded at the front, and carried along the sides enclosing the driver's stand.

So far a one-horse vehicle, a sort of sulky, had been invented ; and it may be worth noting that the creaky old Red River cart of Manitoba, although made with steel tools, contains no trace of metal. Its gait is a walk. But it was obvious that by using a pole instead of a pair of shafts, two ponies could be driven, and trotting became quite possible so far as the grass extended. Still one hesitates to use the stately name of chariot for a vehicle on three-foot wheels, drawn by shaggy ponies from the milch herd. Yet it had use in war because the machine could be driven by a charioteer, leaving

the warrior free to use his weapons. At least it brought the warrior, after a long march, at a decent speed fresh into action ; and, although he fought afoot, he had the chariot to rally upon, for cover and a position when hard pressed. The British warrior ran along the shaft to the attack, retreated behind the dashboard for defence.

THE RIDDEN HORSE. Many a time have I seen the pony herd drift out to pasture, or trail down of an evening to the water hole ; but I do not remember a herder going afoot. For boys to ride on herd was only natural, and I have no doubt that ponies were both ridden and packed from very early times. We may find guidance here from Red Indian practice.

The Blackfoot nation were a woodland people, and, as first known to the white men, lived on the head waters of the North Saskatchewan at the southern edge of the Great Northern Forest. In the earliest years of the nineteenth century some Kootenays crossed the Rocky Mountains from the west, and arrived in the Blackfoot hunting grounds with the first ponies ever seen there. They made a good sale to the Blackfeet, which started a steady trade. Moreover, the Blackfeet made no bones about taming and riding these feral

ponies, and holding them on herd. For better hunting and convenience in herding, they moved about three hundred miles to the southward out on the open prairies, but well within sight of the Rocky Mountains, which made a stronghold in the event of disaster, a hunting ground in seasons of scarcity. They took to bison hunting for a livelihood.

The daily bathing, winter and summer, in a very brisk climate, the sweat baths which preceded all religious rites, the freedom from vermin, the chastity of the women, the valour of the men, the purity and spirituality of their life, their wonderful psychic development, and hypnotic medical practice distinguished the Blackfeet even among the glorious tribes of that region. In grace and endurance as horsemen they have not been equalled in our time. Young warriors were trained in the ordeal of fasting and prayer in solitude until they had contact with the unseen ; next in the ordeal by torture ; and last in the ordeal of war. A warrior assembled a party of young men, and after they had been purified and blessed, they took the war path, mounted, or more often afoot into the territory of some neighbouring tribe, such as the Gros Ventre, Absaroka, Sioux or Crees. Their mission was to enter

the hostile camp at night, loose and drive off the war horses tied at the lodge doors, or stampede the tribal herd, and drive straight for home. These little excursions, practised by all the tribes, led to occasional unpleasantness between them, and engagements were fought when one side could lure the other into an ambush, cut off a hunting or war party of the enemy, or surprise a hostile camp. Fighting mounted with lance or bow and arrows, the Blackfeet developed forty thousand cavalry within twenty-five years from the day they first saw a pony. Shock action was unusual, and the tactics were generally those of cavalry in reconnaissance. A raw-hide string round the pony's lower jaw, and a robe tied on the back with a surcingle completed the equipment ; but the warrior, whose costume was a breech clout, would usually be attended by a pack pony to carry his war kit and face paint for use on occasions of high ceremonial, or a full dress battle.

It is a superstition of running and jumping horsemanship that a big horse and a little man are the right combination for travel. The Red Indian of the Plains would average five foot ten, and his pony say thirteen hands, a big man on a very little mount. The United States cavalry were on the average smaller

men on very much larger horses. They sometimes intercepted Indians on the march, but rarely overtook them. Closely pursued, Chief Joseph commanding the Nez Percé tribe, marched with his women and children fourteen hundred miles, before the United States forces succeeded in intercepting their flight. In the case of the Blackfoot outlaw Charcoal, up to a hundred-and-sixty Mounted Police were engaged for four months catching him. So on the whole the primitive savage, once he had a pony, was not deficient in mobility. And given the pony, he became the Mounted Barbarian whose Hordes played havoc with the elder civilizations. At the very dawn of History three hundred thousand head of Turanean chariotry romped down on the Persian Empire. They are said to have been very haughty and oppressive to the poor Persians.

The fact that range men travelling are usually attended by a herd, change ponies at every halt, and so ride fresh mounts two or three times a day, gives them a mobility with even the smallest ponies which has never been matched by one-horse cavalry. It was not the foray, but shock action which had to wait, until the crossing of stocks produced the war horse.

CHAPTER V.

THE HORSE IN HISTORY.

I. THE DAPPLED HORSE OF EUROPE.

THE BALTIC PEOPLE. The Baltic, which once drained through Lapland to the Arctic, became, as the icefields melted, a land-locked lake until a local sinkage of the rocks opened its Danish channels into the Atlantic. At the same period the North Sea was eating its way up the old vale of North River.

The melting of the icefields had left these Baltic and North-River Provinces of Cloudland an ill-drained country of bare rock wastes, of boulder tracts and clay, cluttered with lakes and swamps. It was long before its damp and frosty soils yielded a scanty crop, eight bushels of wheat, for instance, in Plantaganet England as compared with thirty-six bushels, the present average. The only wealth was that of fisheries in cold and deadly shallows.

Here, in a rapidly improving climate, was a school of manhood which educated poor savages who lived on shell-fish, driving them

by straits of famine to exercise a varied skill as fishers, hunters and farmers with the changing seasons. As these people always bred more bairns than they could feed, their overcrowding led to bickerings, and mutual recrimination weeded out all but the best fighters, while pestilence swept away those who were not quite hardy. The blue-eyed, fair-haired ruddy folk of Cloudland grew tenacious of life, and very hard to kill, thrifty, austere, fiercely self-governing. Never has the world known men more formidable, adventurous, abler or more daring than these Vikings of the northern seas, and pioneers by land who set forth out of Cloudland to find homes. They had a strong preference for other people's homes.

To realise the temper of the Baltic, glance for a moment at the old quest for cod, and the curing stations for stock-fish which formed a series of stepping-stones to bridge the North Atlantic, and so led to the discovery of North America. The founding by blonde adventurers of the Hohenstaufen and Romanov dynasties, and of the British kingdom, are Baltic roots from whence have grown the German, Russian, British and American world powers holding dominion over half the Earth. All that steam is to the mechanism of the planet, or to

our own industrial engineering, the Baltic Force has been in history.

Long before the dawn of historic times the Baltic region was brewing human storms, which swept outward in all directions, but mainly into regions toward the sun. It is not blind accident which leads the modern Prussians to seize the coal and iron fields of Belgium, the oilfields of Galicia, or the copper mines of Serbia ; for, not only are Baltic storms of overwhelming strength, they are organized by strategists, led by tacticians and concentrate attack upon the most useful countries.

Yet there is always a limitation to the Baltic conquests. When the blonde conquerors seized Greece or Italy, Spain or Asia Minor, districts enclosed by sea and mountain barriers they always held their own. When on the other hand they conquered a country open to attack such as Germany or Russia, Hungary or the Balkans the next wave of the Tartar Hordes has overwhelmed them by sheer weight of numbers. So the early Balkan conquests on the Mediterranean were cut off from the homeland by swarms of Asiatics whose dark haired descendants, known as the Alpine stock still hold large mountain regions from the Black Sea to the Rhone.

Wherever the Baltic people hold their conquests in Asia, Europe, or America, a nation arises of mixed blood from their marriages with black-haired natives or fellow emigrants. A few centuries after the settlement, four hundred years or so, the austere republic, or monarchy of free men with a king as Leader, blossoms into a grand empire, ablaze with genius, rich, corrupt, decaying.

But, if the Baltic colonists have settled to sunward of the 49th parallel, the sunlight begins to affect the nerves of the blonde emigrants, to weaken the children, to give a feverish energy to business, to kill off the unsheltered outdoor workers, and emasculate the sheltered aristocracy. A few centuries later the dark-haired natives of the region have time once more to resume their ancient habit of sitting in the sun. They made the statues and portraits of fair gods and saints, blonde kings and heroes. "Once upon a time," they say, "we had Olympic games. Our cavalry were irresistible. We ruled the entire world!" But the race of the blonde conquerors has perished from among them, gone like last winter's snow save for a few surviving aristocrats, and some poor melting drifts of peasantry up in the moun-

tain valleys where there are clouds for shelter.

THE HELLENIC HORSEMEN. While the Baltic region itself was still sub-arctic, perhaps with no horse-stock as yet much better than Celtic ponies, the oak woods of the Danube valley were breeding sturdy Dapples, while the Tartar hordes with each invasion scattered Duns as far as central France. Even the white horse of the Southern steppes, rare and held sacred by the Northern people, was known in Central Europe. So when the fair Achaeans came to Greece they brought not Celtic ponies but Duns, and a few Dapples picked up upon their journeys.

In the sagas of the Northmen, as in the legends of Achaean Greece the blue-eyed, ruddy, tawny hero makes love or war to worship a fair woman. The vein is epic, but there is a difference of mood ; for in the North its atmosphere is one of gloom and terror shadowed by awful Fate, but in the south of sunny splendour, gallantry, and joy. The theme of the winged horse has its weird Valkyrs riding to find the slain through battlefields at night, and its gay flying Pegasus in the Sahara, who will not be caught save with a golden bridle made by magic.

The Ocean God gave Peleus a chariot team "Dapple" and "Dun" by name, both with great flowing manes, "swift as the winds, the horses that the harpy, Podarge bore to the West Wind as she was grazing on the meadow beside the stream of Oceanus" Peleus lent the team to his son Achilles. Then Achilles' charioteer was killed in battle, and the horses mourned. "Hot tears," says Homer, "flowed from their eyes to the ground as they mourned for their charioteer." The fellow used to oil their manes, poor dears. They wept from the eyes, and not, as modern horses do, from the nostrils. But then you see they were not ordinary horses, because their mother was a harpy (*vide* books on Unnatural History), and their sire was the West Wind. They were foaled on the shores of the Western ocean: Dapple of the woods, Dun of the grass lands. And Pegasus was a Bay from Africa. So one finds in the oldest myths of the Hellenes record of the three primary stocks from whom all modern breeds are descended.

To these Hellenes the hearth, the log cabin and the mother were sacred, the bases of all religion. The hearth became an altar, the cabin a glorious temple of white marble, the mother a goddess whose statue was ivory and

her robes of massive gold. Outside their holy faith nothing was taken very seriously, and the people had special delight in nonsense animals. The centaur or man-horse was a prime favourite, and they did not worry over his stable management, a most revolting job. The man mouth would refuse the forage urgently required by the horse-body, and if they compromised on oats as porridge, even that would pall. Still centaurs would be gentle, and less likely to butt, than the buck unicorn of our own mythology. The Centaur Cheiron indeed was not only gentle but the eminent headmaster of the earliest public school. Solving the diet question with fish, game, fruit and wine, he lived to a good old age.

For a people of so lively a mind as the Greeks, progress was rather slow in the use of horses. Supposing the siege of Troy to have happened about 1000 B.C. they were solely dependent on chariotry in war while King Solomon had 12,000 cavalry.

Three centuries later the Greek colonists of African Cyrene, that "city of fair steeds and goodly chariots," sent home shipments by direct sea trade of desert Bays for breeding. With the improvement of the horse stock four-horse chariots began to compete in the Olympic

Games of B.C. 680. By B.C. 640 the ridden horse had become of consequence enough to share the great honours of the Olympiad, but still the tactical use of cavalry was delayed. Greece is a small rough country much broken by sea channels, and no more suitable than Scotland for the effective use of the mounted arm in war. So, even as late as the Battle of Marathon, the Persian Horse found the Hellenic army afoot ; not until the fifth century was the Greek Cavalry of any consequence.

In the Greek statuary of the Great Age we see the Hellenic horses clearly as though they lived. The chariot horse was a noble half-bred carriage animal standing at least sixteen hands. The cavalry remount stood about fourteen hands with a head of unmistakeable breeding from the Bay, and a general chunky comfortable build which suggests the Dapple, but certainly not the Dun who had served with the heroes of the Achaean age. The Welsh pit pony, used as a yeomanry remount, exactly corresponds with Xenophon's careful description of the ideal cavalry horse. "A double back," says he, "that is, when the flesh rises on both sides of the spine, is much softer to sit upon, and more pleasing to the eye than a single one." That was before the days of

saddles, and horsemen had tender interest in the double back—the characteristic back of dappled horses. Of the Hellenic seat we will speak in the chapter on straight-leg riding.

Among all ancient horsemen the great problem was to reserve both hands for the use of weapons. This involved a life training in steering by pressure of the knee or calf, but dressing in military formation was still impossible without control of the horse's mouth. Many nations used a nose-band, or a twitch round the lower jaw, and a head-rope for steering ; but still in practice the formation would be that of a mob. So Xenophon seems to have borrowed the bitt from the chariot harness, using a rough one for breaking, and a smoother kind for trained horses. His illustrious cavalry owed their prestige and power to a proper formation, and ingenious tactics.

THE ROMAN HORSEMEN. The Romans of historic times were descended from a fair race of the Baltic region, and the blonde aristocracy still ruled among a dark Mediterranean population. Their culture was adopted, and mainly Greek. Their original Dun and Dapple horse stock was crossed from early ages with African blood, and as time went on they commanded the use of every decent horse strain in

the world. Their officials were *Curules* as a class from the word *Currus* for chariot, whose seats of office were chariot chairs, and their state allowances included chariot horses. Their gentry were known as *equites* or horsemen. They developed a mania for chariot racing, and their four factions known from the racing colours blue, green, white and red, outlasted the Western Empire to be a public nuisance in Constantinople. And yet a people may have money to bet on racing who in their hearts care nothing more for horses than does the sporting cockney.

Rich youngsters might swank on horseback to impress the girls, but one does not read very much about a mounted aristocracy like our own, with gallant games like polo or manly pleasures such as modern hunting. At heart the Romans of the Empire were anything but horse-proud. In their military practice they never aspired to the glories of the old Greek Cavalry, or bred a horseman tactician to compare with grand old Xenophon.

Some fifty years before the Christian era, Livy described the heavy cavalry only as using bridles. This being interpreted means that the Roman dragoons were able for shock action, while their Hussars steered by the knees and fought in open disorder.

On the whole it is difficult to ascribe to the Romans any advance in the art of horsemanship except in the matter of draught. The heavy engines which correspond to a modern siege train required not only draught beasts—oxen possibly, but also the paved causeway. The Roman road for horse traffic was as big an invention in its effect on civilization as the steam railway of our modern transport.

THE NORTHERN Let us turn back to the Northern Ancestors of both Greeks and Romans. The *Heimskringla* shows the ancestral home of the Norse to have been in Russia. By the time they colonized Scandinavia, they were discarding the chariot, were fighting on horseback, and had waggons as well as sleighs. A Bronze age waggon at Copenhagen differs little in structure from those in use to-day. This waggon confirms the stories of gods heroes and kings riding and driving powerful horses at least as large the big Duns of modern Scandinavia. The theory of scrawny little ponies appears to the sheer nonsense. The evidence points indeed to a more general and more advanced practice of horse management than either the Greek or the Roman.

THE GOTHIC HORSEMEN. While the Romans made no special advance in horsemanship the

fair Barbarians of Germany and Gaul evolved a notable idea. The gentleman rode to war attended by a couple of mounted serfs who had a remount for him if his charger fell, or even replaced his loss in the fighting line. In late times the Gothic gentleman became a knight, and his attendants were esquires in training until they won their spurs.

See then how the Latin word *equus* for a horse gives us *equites* as the rank of the ancient gentry of Europe, and Esquire the rank of our modern gentleman. The French word for horse : *cheval* gives us Chivalry and Chevalier. The Spanish word *caballo* gives us Cavalry, Caballero, and Cavalier. The horse has taught us more than ever we taught him.

THE PACK HORSE. While chariotry and cavalry were mainly engaged in killing civilization, the unobtrusive pack pony did almost as much as the ship in spreading culture along the channels of commerce. From the port of London for example a pack trail starting at Tower Hill ran westward along Newgate, Holborn, Oxford Street, and Bayswater Road, crossed the Thames at Oxenford, then branched to the gold mines of Dolgelly and the tin deposits of Cornwall. Along this artery flowed the Phoenician culture.

A little later the merchants of North-western Europe in search of salt, landed at the Cinque Ports of Kent. Their pack trails converged to drop down Blackheath Hill. From thence the one trail coasted the southern edge of the saltings of Southwark by way of Old Kent Road and Bedlam, striking the first firm ground in the river bank at Lamb's Hythe (landing), where the Bishop of Canterbury afterwards built his town house. From Lambeth at low tide there was a ford to Horseferry Road on the Isle of Thorns in mid-river. From the island site of the City of Westminster, there was a broader but very shallow ford across the north arm of the Thames. One may see the north bank of the Island at Great George Street, Westminster; but the site of the pack trail is lost. It took up the ridge between the Tyburn and Bayswater brooks, avoiding the mudholes of both, along Park Lane. At Marble Arch it swung into the Bronze trail, to leave it presently at Tyburn Tree, and strike up Edgeware Road, and so via Watling Street to the salt wells in Cheshire. It was along the Bronze trail and the Salt trail that civilization found its way into England.

Were I a merchant I might see in wool the single origin of my country's wealth; were I a

broker I might see in stocks and shares the origin of prosperity. Each to his trade ; but as an old packtrain captain I have ridden many a hundred miles, noting the grass-grown bridle paths along dry ridges, the hesitating down-hill curves of ancient roads as they approach wet ground, the outer hedging and the inner hedging as highways narrowed down when they were paved, and public house signs, such as the Packhorse, dating from the recent centuries when still the traffic of old England was done on cargo ponies. It needs but a little scouting to show clearly the story of some fifteen hundred years of England's progress down to the time when Cæsar's strength was taxed on joining battle with the British tribes. Our people, like the Gauls, had roads and chariots, armour of bronze and gold, old trades, and industries and towns before the Romans came.

II. THE DUN HORSE OF ASIA.

As the Earth reels through the Dark, and on her journey spins like a sleeping top, we only notice the changing of the seasons while she swings round her great orbit, and the swift passage of flying nights and days. It is only when one is quite alone in the far wilderness that one begins to feel the Earth in motion, and after sunset to watch her shadow climb the

eastern sky. To roll one's bed down beside the waning camp fire, to turn in and smoke the evening pipe, to lie looking up at the stars, is to know that one is only a speck of loose dust on a flying sphere, flung eastward at a thousand miles an hour, yet held down by the pull of the Earth's weight safe from being whirled away into space. Loose adventurers like me, loose air, dust, water, and loose tribes of men are all being flung with the surface, pulled by the centre of the Earth, and drifted about all the time without our knowing why.

Of course the weaker tribes have been flung eastward so far as there was land, and stay where they were thrown in China, Indo-China, Burma, and Bengal. Only the stronger races have thrust against the motion of the planet. These dark-haired sallow Asiatics, Scythian, Hun, Tartar and the rest were bred in regions of strong sunlight, filling their native steppes until they were overcrowded. They were harmless shepherds and herders who did a little hunting. But for the Dun pony we might not have heard much about them. When they tamed the pony the savages became barbarians, the little scattered tribes were welded into formidable hordes. And then they swarmed like locusts eating up the world under

some ruthless Caan a Genghis, a Timour, burning all civilization, trampling out the embers of human reason. And in their wake came twilight—the Dark Ages.

History is a jade. She has a glad eye for soldiers and sportsmen whose business is destruction, but turns a sour face from lousy pilgrims to the shrines of Faith, poor craftsmen and scholars burdened with the tools of Progress, drab merchants who carry Culture in their packs, and all the messengers of civilization. Of these her annals are curt and negligent. She has plenty of gossip about Kings more or less human as advertised by scribes more or less venal; but keeps no chronicle of the pack trails on which the little Dun ponies carried all that made civilization to the camps of the barbarian and the savage. She told us nothing about the hundreds of opulent cities which now lie dead and buried in the Mongolian deserts. One does not like to speak ill of a lady, but her sense of truth is always moderate.

Adventure is not officially authorized as one of the Muses, but she is as truthful as History, and a deal more amusing as a guide.

History says that nations who had no horses used to be terrified at the first sight of horse-

men, and cites the instances of Peru and Mexico when Empires collapsed in superstitious fear. It seems quite natural then that the first mention of the horse in China should call him Dragon-Beast. He was not really formidable, being only a Dun pony carrying no doubt the good Mongolian pack apparel which consists of a saddle, and a detachable cargo rack, the oldest rigging known. His cargo was a lodestone, a rock of magnetic iron which served the Chinese Emperor as a compass. When the pony wanted to go west, and the magnet insisted on north his celestial majesty probably saw a jolly good bucking match.

From China to the Atlantic, and from the northern Taiga to the Indian ocean the old world was threaded all across with pack trails snaking from water to water over the deserts and pastures, the forests and the hills. Except in the very dry districts where camels, asses and mules were employed for transport, the Dun ponies did all the carrying over-land. From China to Europe was a three years' journey, not because of the distance but by reason of the robbers who made the trail unsafe. At each market town the packtrain captains waited, perhaps for months, until a caravan assembled sufficiently large to under-

take the journey. There were periods when great Tartar Caans controlled the whole of Asia north of the Himalaya, together with the grass land known now as European Russia. These monarchs from Zenghis to Kublai and later had post trails with post horses, and horses in relay for ambassadors and despatch riders bearing a golden tablet of office. Old Kublai for example was busy building Peking when he sent the Polo brothers as envoys, riding post with the golden tablet, to visit the Pope in Rome and ask for a batch of priests to teach him the Christian faith. For years young Marco Polo, nephew of these merchants, rode past as envoy, visiting every realm in Asia. Very different were the ramblings on the pack trails of that rare scamp Fernão Mendes Pinto who in the sixteenth century worked as a slave on the Great Wall of China, travelled with marching armies, and as a fugitive tramp found his way by mysterious Lhasa, to the coasts of further India. Another colossal journey was that in the eighteenth century of Vitus Bering the Dane with his Russian trappers, and Stellar the German naturalist trekking on horseback to the sea of Okhotsk. There they built a ship, and sailed in search of the mysterious straits of Anian leading through

Meta Incognita to the Atlantic. They found America, but were wrecked at the tail end of the Aleutians. The surviving trappers built a ship and loaded her with sea-otter skins. These they sold in Pekin for wealth beyond dreams of avarice, and so returned riding as rich men home to their native Russia.

It was in the days of Queen Elizabeth that English envoys and merchants found their way by water and the trail of the Dun pony from the White Sea to Persia and on even to Goa on the Indian Coast.

The trail of the Dun horse always led to adventure. Daring traders went to swap gems for silk at the Court of the great Mogul, or sold white ladies of the Caucasus to Haroun al Raschid down in Bagdad, or to Suliman the Magnificent at Stamboul, or offered purple shell-fish dyes of Tyre to tempt the young Prince Siddatha, or came from the East with gold and frankincense and myrrh and laid them at the feet of a Child in Bethlehem, or journeyed from Sweden with swords for the Prophet of Islam.

III. THE BAY HORSE OF AFRICA.

Apart from the sacredness of the Old Testament as dealing with the origin of a religion, we may, without offence to fellow Christians,

read this collection of Hebrew books as the secular history of an able but unholy people.

The collection of stories known as Genesis consisted mainly of heroic ballads, cast in the form of verse which can be easily and accurately remembered. These ballads were recited until at the time of the Babylonian Captivity in the fourth century B.C. the people learned to write and set down their annals in the form of manuscript. We may find the stories lacking in the salt of humour ; we may doubt that singers and scribes were apt to improve on the original words, piling a deal of exaggeration on the naked facts ; but at the very worst these legends of old Israel are terse, clear, consistent and gloriously true to human life and character. I had read the story of Jacob the Sneak, and Joseph the Prig, of gallant Esau, and gentle Ishmael in camps of live Red Indians, before I realised that Genesis is true to primitive life as a whole, and that, after forty centuries, the legend still glows and burns in its immortal truth, beauty, and power.

The story deals with wealthy Arabian stockmen. They and their neighbours bred she camels for milking, rode camels and asses, and used both for pack animals. They seem to

have valued oxen for heavy draught as well as for beef and hides, or they would scarcely have bothered to winter the cattle in stables. As any stockmen sees at a glance the sheep and goats were handled by experienced owners.

The stock would not have paid without a market, so, as these Arab sheiks had plenty of gold, we may presume that they dealt in wool, beef, hides, and draught animals with the fortified trading towns of the watered farming districts. No doubt they sold pack beasts also to the trading caravans.

There were no horses in the world as known to these folk. Abraham visited Egypt somewhere about the nineteenth century B.C. and found no horses there.

Beyond the skyline of the western desert from Egypt to the Atlantic ranged the Bay horse, the Barb of times to come. He was a delicate, swift creature, very brave and gentle. His arched neck bore a black and streaming mane, his tail was set high and carried clear of the rump. His eyes were set low, wide apart from which the dainty muzzle tapered, to sensitive nostrils and to lips like velvet. Legends of later times, and other countries made him son of the west wind, while custom gave each of his families a surname. They

have always been exempt from labour, attended by human servants, treated as a nobility. From very early times they were admitted to the private family life of the Libyan people, and driven with the four-spoke wooden chariot until both men and women learned to ride them.

In much the same spirit as our country folk go to town for shopping, it was the pleasant custom of these Libyans to raid Egypt. Between war and commerce the Egyptians brought Bay horses into their own use at some time later than the visit of Abraham, but prior to that of Joseph. This might be about the eighteenth century B.C. the era of Stonehenge.

Shortly afterwards horses and chariots began to appear in the painting and sculpture of Egyptian artists. Horses must still have been scarce when the Pharoah gave to Joseph a signet and royal robes, but only lent him his second best chariot. It is true that the people already owned a few horses, for in the great famine Joseph accepted them in trade for grain.

It was in that generation that the dying Jacob, speaking from knowledge common among the civilized Egyptians, mentioned both ships and horses. He was frank enough to call

his son Dan "an adder in the path, that biteth the horse heels, so that his rider shall fall backward." Here is the earliest mention of the ridden horse. It was in Jacob's funeral procession to his native stock range east of Jordan that there appeared "both chariot and horsemen, a great company."

One suspects a trace of swank in the story of that "great company." Jacob's countrymen were sheep herders, destined to go afoot for centuries to come. The Egyptians used chariots, but never took to riding as a habit. Merchants were trading horses to the Hittites, but that (until Ptolemy Philadelphus made water holes, and a highway in the second century B.C.) was done in face of extreme difficulty. The week's passage of the Desert of Sin could be made only in the first two months of each year, and even then the horses must be refreshed from water bags carried by camels. On the whole it is likely that the great company of chariots and horsemen was a poetic device for making the most of Joseph's posthumous importance.

According to Manetho, the well-known Egyptian historian, somewhere about the twenty-first century B.C. a most objectionable sheep-herding tribe of Arabs began to infest

lower Egypt. Manetho is prejudiced ; but just as in modern Western America where the sheep herder is rated among cattle men as something rather lower than a dog, it is amusing to see how the poet in Genesis admits that shepherds were an abomination in the eyes of the Egyptians. If one dates Abraham's visit to Egypt in the twenty-first instead of the nineteenth century B.C. old Manetho and the Hebrew poet are perfectly agreed as to the Hyksos-Israelite invasion.

The Genesis narrative shows the insidious way in which the children of Israel drifted down into Egypt, then how they made themselves agreeable as office holders, and by introducing frogs, flies, lice, cattle sickness and other improvements until at last the Egyptians waxed desperate and ran them out of the country. Manetho says that these Hyksos people occupied lower Egypt east of the Nile from Memphis to the sea, and later on established a dynasty with six Kings in the succession. After five centuries the Egyptians combined under the Thebaid Kings of upper Egypt, and drove the Hyksos across the Desert of Sin into Palestine. It is quite possible that in Genesis, and Manetho's History we have the two sides of one story, and that it was the

possession of the Libyan chariot which made the Egyptians powerful enough to rid themselves of the artful but not very warlike children of Israel.

It is amusing to note the ways of the tribal poet in Israel who describes the murrain of cattle as killing off every horse in the length and breadth of Egypt, then out of spite kills them all over again by drowning in the Red Sea.

Setting the date of the Exodus at B.C. 1580, it would be about B.C. 1540 that the Israelites were afraid to attack the Canaanites who had good iron chariots. In the same way a nation armed with muzzle loading guns might hate to molest an army with quick-firing artillery. Forty years later, about B.C. 1500, horses began to appear in Mesopotamia, a bad lookout for Israel, destined some six centuries afterwards to be trampled under by Babylonian chariotry.

Some day we shall have a science of comparative chronology to guide us in our studies, and so be able to see how little improvements in horse-breeding, or the use of iron in building chariots, affected the rise and fall of nations. In the meantime some known facts of Red Indian history may help us to understand events in ancient Asia.

In primitive Red Indian life the tribes were

seated too far apart to get at each other for serious pitched battles. In lack of horse transport trade was limited to the waterways, and warfare to minor internecine pleasantries which kept young men in training. From the sixteenth century the pressure of white men driving in from the Atlantic began to affect these almost civilised people, forcing them to abandon their farms, fisheries and towns, reducing them to savagery and compelling them to trespass on occupied hunting grounds. All nations were set by the ears. Then they began to get ponies, and the rest was chaos.

So perhaps in Asia, the movements of tribes afoot may have been gradual overflows from crowded districts, and warfare a matter of cheery little forays to please the young. The possession of ponies gave a tremendous impetus to war and trade. From that time onward the tribes which were best mounted had a political future, and there was a slight handicap in favour of nations with Libyan Bays of fourteen hands two inches as compared with tribes using the Duns of Asia.

The Egyptians had horses in the eighteenth century B.C., the Israelites a few in 1580, the Hittites and Canaanites in 1540, the Assyrians not until 1500 B.C. Now Egypt, Canaan,

Syria, Mesopotamia and Arabia had no native horses. The Egyptians got horses from the Sahara, the Asiatics mainly through Armenia. I cannot believe that the crossing of small Duns with small Bays in any region bred heavy horses for the needs of war.

A practical nation in the breeding trade would not rely for heavy stock upon the crossing of light strains. The way to get heavy stock is with strong food. Such oases of great deserts as Egypt and Mesopotamia had very little pasture, so long as their nations prospered. Every acre then was needed for strong grains. The well-mounted conquering nations were not those with splendid pasturage like Northern Africa or Southern Russia, but those which had no pasturage at all, who were compelled to feed horses on fodder more potent than any natural grass. The King's people might go without, but one may be perfectly certain that the King's horses lived on corn. What tribe or race of folk inherited Egypt or Mesopotamia mattered nothing, what strain of horses they owned mattered very little, but the people and the horses, for the time being in possession of irrigated oases walled about by deserts, raised the chariotry or the cavalry which ruled the surrounding world.

Each nation passed through a phase when chariotry were the only mounted troops of tactical use in war. The importing of the largest and heaviest horses to be had, the feeding of these with grain, and cross-breeding of the Dun types with the Bay produced by slow degrees a remount for use by cavalry.

Earliest in the running were the Hebrews, for about 1000 B.C. King Solomon built stables for 40,000 chariots, and as many as 12,000 cavalry. As early as 700 B.C. Armenia, being in contact with the Asiatic and Russian horse stocks, became a large horse breeding establishment, supplying remounts southward to Asia Minor, where in B.C. 560 King Croesus of Lydia had good cavalry, to Syria and Palestine, to Assyria, and to Persia down to the fourth century. But in the meantime shipping had grown in the Mediterranean, and ships of sufficient burden to carry African Bays began to supply the Greeks. From the pony chariots of the fourteenth century B.C. a steadily improving stock marked the rise of Hellas. The Achaeans of 1000 B.C. had imported Bays. The Greeks of 400 B.C. had cavalry. Then came the breeding of fine horses in Macedonia, and, after the death of Philip in B.C. 336, the mounted troops of his

great son Alexander swept like a whirlwind across the Eastward deserts to where the monsoon rains made India populous. By this time cavalry had replaced the chariot. At the era of the Christ a chariot was still used when a victorious general entered a city in triumph. But the use of chariotry in war was limited to remote barbaric tribes such as the British.

The chariot for practical purposes was extinct before a single horse had found his way over the long dry marches leading out of the world to the remote oases of Arabia. Strabo the geographer, who at the era of our Lord made a survey of the known world, found that the horse had not yet entered Arabia. A land indeed where no water can be had except from wells was not a possible range for pastured horses, and the horse has not sufficient thirst endurance to be of much use for transport between the oases, whereas asses and camels were to be had much cheaper.

It was in the earliest Christian centuries that Arabian chiefs began to import Bay horses from Egypt. It seems likely that the beginning of their sea-trade enabled them to do so. While almost all nations of Europe and Asia were compelled by the need for heavy war horses to feed grain and to cross the imported

Bay with their native stock, the Arabs tried to preserve the purity of the desert breed. Even at this time eighty-five per cent. of high caste Arabian horses are Bays ; and there is only one strain of any importance, the Hamdani so crossed with Russian Tarpan as to be white or grey. It must be remembered, however, that the demand of the Indian and European markets for greys and for heavy cross-breds has led the Arabs to breed extensively from their low caste strains. Moreover, the neighbouring regions of Syria and Mesopotamia sell cross-bred horses as " Arabian " regardless of colour, and of honesty. The Bay mares of the real Arabian aristocracy are never sold, and of the horses very few reach the market as compared with the numbers of low caste animals forming the ruck of the trade.

Down to the seventh century A.D. the Arabs were busy breeding from a very few imported Bays their meagre supply of horses. So far as the possession of horses went they would not have attracted much attention but for the coming to Arabia of steel weapons.

From prehistoric times the Swedes had been mining iron, and their trade routes led by river, to Novgorod, where lived a trading family the Romanovs, from whom descend

the Emperors of Russia. By river boat and by pack trail the Swedish iron found its way to many markets. Towards the seventh century the iron reached the Arabian oases to be forged into weapons of Islam. When the Arabian horsemen were armed and inspired by Mahomet they set out to conquer the world in the name of Allah. With the Moslem conquests eastward to Delhi, and westward through Spain to Poitiers, the Bay Horse passed into the commerce of mankind, adding to the endurance of the Asiatic Dun, and the strength of the European dappled horse that touch of gentleness and fire which quickens a dull animal into a living spirit.

CHAPTER VI.

HORSEMANSHIP.

I. THE STRAIGHT LEG.

THE SEAT. Among the Red Indians I have known, the mounted people were the Blackfeet, Stonies, Crees, Yakimas, Navajos, Moquis, and a few tribes in Mexico. So far as I can learn no Indian was ever taught to ride, or heard of riding as an accomplishment to be learned. The commonest equipment was a blanket and surcingle ; but all the horse apparel used by white men was eagerly played for in the gambling games. The riding seemed to be natural, with a perfection of grace one rarely sees among white men.

The man rode down to his crotch, yet the forward slant of the thighs gave rest to the pelvis bones upon the horse's back, while the lower leg hung vertical and loose.

At halt or walk the whole seat was loose, but as the pace increased at trot or canter the

thighs locked with a grip of tremendous power, rigid save for the play of the skin. From the waist upward the poise was quite erect, and supple, with the shoulders slightly eased.

At a gallop the lower legs wrapped round the horse's barrel, and the movement of the man as seen behind an edge of skyline was like the flight of a bird.

For pony racing boys rode instead of men. Since the boys' legs were not long enough to wrap round the horse, the thighs were lifted, nearly horizontal, the lower legs bent sharply back, and a surcingle was strapped across the knees. Still the perch was on the animal's back, and not on the withers, as in the negro gait so much admired under the name of the American racing seat.

Was the Red Indian seat straight leg or bent leg? With stirrups it was straight leg. For boy jockeys only the racing gait was bent leg.

A reference to the sculptures of Pheideas, and Praxiteles (fifth century B.C.) shows that the Greeks rode at slow gaits with the same leg as the Red Indian, but like him bent the knees very sharply at racing speed.

At first sight these Greek sculptures from the Parthenon rather remind one of the Red Indian seat. A little closer study shows that

the models chosen by the sculptor were not horsemen, but carefully selected athletes. They were no more horsemen for example, than the glorious athlete represented at high tension by Watts in his equestrian statue of Physical Energy. The back is too much curved for that of the Red Indian, who earned a living on horseback from his childhood, and kept a professional watch on the horizon rather than an amateur's nervous observation of the pony's ears. So one turns away from the misleading splendours of Greek sculpture, to the professional guidance of General Xenophon, a horseman who knew his business. "Whether he uses a cloth or rides on the bare back we would not have him sit as one who drives a chariot" (bent knees), "but as if he were standing erect with his legs somewhat astride, for thus his thighs will cling closer to his horse, and he will be able to wield his lance and shield with more force."

This seems to show that for freedom in the use of weapons the Greek cavalry adopted straight leg riding before they had saddle or stirrups. So far as I can learn the Hellenic seat passed on into Roman practice, but through the Dark Ages which followed the fall of Rome there seems to be no guidance as to

the conduct of horsemen. Horses were not saddled in England until 631 A.D., and the first pictures we have which reveal the horsemanship of the Middle Ages are the Bayeux tapestries of the Norman Conquerors. Now for the first time horses were used by farmers to till the land. Chain mail had replaced the scale armour of the Barbarians. A perfectly straight leg locked the horseman aft against the cantle, forward against the stirrup of a weight-distributing saddle.

THE WAR SADDLE. During the five centuries in which body armour slowly increased in weight, and horse armour was added to the burden, the dappled woodland horse of Northern Europe was bred from strength to strength to take the growing load. So we came by our Destriers, now known as the cart horse breeds, such as the Percheron, Cleveland Bay, and Suffolk Punch, and the heavy draught such as the Shire and Clydesdale.

Plate armour is still worn a good deal on the stage, in pageants and in military tournaments. Men used to this armour tell me that a horseman who rides less than his weight while his limbs are free, rides more than his weight when he is cramped in movement.

Suppose then that a 190 pound man in 90

pounds of armour makes a dead weight of 280 pounds. Add harness and horse armour, and the total weight is about 400 pounds. At a canter this load would certainly need a draught horse weighing not less than 1,500 pounds. Using the English saddlery one would prefer the heaviest draught animal.

Now take a load of 350 pounds in mining machinery and add 50 pounds for an apparejo pack equipment. This total dead weight of 400 pounds would make a light cargo for a 1,000 pound mule or horse, who would carry it without distress a day's march up a range of mountains.

But note well that the bearing surface of the equipment on the horse's back is about two square feet with the English saddle, and nearly eight square feet for the usual apparel of horses in heavy packing. As anybody would rather carry two buckets of water than one, because the load is halved by being properly distributed, so will the horse prefer a heavy load distributed over the whole rigid area of the ribs to a light load concentrated on a few square inches. The distribution of the load is of greater importance than its weight.

In the days of light chain mail a special saddle was evolved with a deep seat wherein

the rider was locked against the cantle by the straight thrust of his legs against box stirrups. As chain mail gave way to the heavier plate armour, the saddle bars were more and more widely padded until they covered every available inch of the rigid ribs.

Nobody seems to have noticed that with every kind of armour a chamois or buckskin lining afforded a rough-grain leather strapping for the unarmoured seat and thighs, and this gave a greasy grip against the oiled saddle.

As the use of gunpowder advanced, piece by piece the armour was put aside, until now nothing remains but the cuirass ; but the leather lining retained its usefulness, and leather breeches are still in very general use among modern horsemen because they give an excellent grip on the saddle.

Armour had reached and passed its greatest weight when the Spaniards conquered the new world, and the Conquistadores took to Peru and Mexico their weight-distributing saddle, buckskin grip, high cantle and box stirrups. The strays from their horse and cattle stock bred feral herds which spread into North America. So stock riders were engaged to handle the Spanish cattle on Andalusian ponies. They kept the old war saddle quite

unchanged, with its weight distribution, high cantle, box stirrups and oiled leather seat.

Next came the American of the North to learn from Texans their art of handling stock, and almost throughout the Western States the Vaquero was replaced by the Cowboy. Both were abstemious and hard-working men. In their valour, gentleness, skill and power as rough-riders they were equals, and hardly surpassed. The methods of both in horse-breaking were altogether vile, and the horse-mastership almost as bad. But there the equality ends ; for the cowboy had endurance and vitality beyond all comparison in the modern world, was master where the Vaquero of Mexico is servant, had the brains and character, the chivalry and high initiative of a ruling race. Without the Red Indian grace in horsemanship, the American cow-puncher takes rank with the knight-at-arms and the cavalier among the greater horsemen of all ages. It is well to give him the credit for experienced and practical good sense in matters of horsemanship and equipment.

THE RANCHE HAND AS HORSEMASTER. While a pony sold at ten dollars he was not considered worth educating. A professional broncho buster took him in hand for five

dollars, and smashed him. The pony was a wild animal, timid but ferocious. The broncho buster was not at all timid, but he was ferocious to an extent which horrified the animal, and intelligent to a degree which reduced the victim to abject obedience. So the horse surrendered and came into the care of a cow-puncher. They started out together on the range, and if they felt fresh of a morning there would be a bucking match which both of them rather enjoyed. There was no ill feeling, for after all a horse is as good a sportsman as any man. Then came the work of handling cattle, and the horse enjoyed that sport which taxed all he had of courage and skill and endurance. It made a partnership between two persons who loved sport, and dealt with cattle as mere lower animals. There was hearty good fellowship between horse and man, which sometimes ripened into a love stronger than death.

Of horsemastership as understood in civilized life there never was a symptom. When the puncher, after long months of abstinent living, happened to ride into a town, he stepped off his horse, threw the rein to the ground and left the animal standing in the street while he got drunk. Afterwards the pony would carry

him homeward unless he became dead drunk and fell off. The pony went to camp anyway, to get himself unsaddled and join the herd. Sometimes the puncher didn't even get drunk, being broke, or in love, but that made no difference to his meticulous neglect of the whole practice of horsemastership as explained in books.

And the ponies prospered, usually fat as butter because they lived a perfectly natural life.

THE RANCHE HAND AS HORSEMAN. Nobody taught the budding cowboy any art of riding. It was merely a habit. When the saddle taught him to sit well down and ride straight leg he ceased to tumble off. When he left off interfering with the rein the horse steered clear of holes, and there were neither stumbles nor falls.

From camp gossip he knew that a horse cannot buck if one keeps his head up. If the novice did amiss the foreman or some elder cowhand advised him. The pride of a great calling made him a stickler for exquisite form in riding, and the emulation to beat rival outfits imposed on each a high standard of efficiency. The work was usually done at a canter to allow of the lightning swiftness in

turning to head off cattle, wherein the punching of cows closely resembles polo. Travel on the other hand was alternate trotting and walking. The seat at the canter was almost Red Indian in its grace. The seat at the trot thrust the buttocks against the cantle, and raked the body at a slant very stiffly forward, the back forming a straight line, and the head thrown up so that the eyes were level to the horizon. This trotting seat was ungainly, but, like the more graceful English trotting, was supposed to ease the horse. Undoubtedly the horsemanship was fine, especially in the delicate art of roping, and never more so than in the occasional use of a pony as pack animal on journeys. The single-hand diamond hitch in loading a pack horse is a very fair test of a man's all-round skill and deftness with the hands. Other signs of fine horsemanship might be noted in the suppling of leather work, the pride in a clean gun, and a youthful delight in silver ornament of belt and spur and bridle.

In the study of American range horsemanship it is well to remember that the experts who contributed to the practice were not limited to ranche hands, but included scouts, the military, forest, fire, game and other types of rangers, trappers and wolfers, express riders, prospectors,

traders, the Rocky Mountain outlaws, the sheriffs and marshals and Mounted Police. The equipment is mainly of Spanish origin, and named with Spanish words.

II. EQUIPMENT OF HORSEMEN.

The healthfulness of a horseman's life has developed to the fullest extent his natural passions both in love and war, and it is a notable fact that the males of nearly all species who love and defend their mates go very bravely dressed. So in all ages both military and civilian horsemen have worn an honest bravery and gallantry of equipment suited for loving and fighting, for quests of bold adventure and of conquest. Much that in a clerk or craftsman would be grotesque is seemly for mounted men.

THE SWEAT PAD. In Queensland, Argentine and pack train practice, it is usual to lay on the horse's back a soft sugar sack, a crash towel or other fabric not likely to slip or crinkle. This is called the sweat pad. Its first purpose is to receive the special marks made by any turning or chafing of the horse's hair which may be the beginnings of a gall. Its second purpose is to take the sweat, hair, scurf, grease and dirt which would not be noticed on a dark blanket, but is easily seen and rubbed or washed out of a

sweat pad. The third purpose is to keep the blanket perfectly clean for the man's use at night. With saddle and pack horses the horseman gets two blankets, a canvas pack cover and his rain coat, enough material for a luxurious bed.

THE BLANKET. Because the numnah makes poor bedding one prefers a blanket. If one cuts a hole in a numnah to ease an incipient blister on the horse, the edges of the felt are apt to cause more blisters. Another advantage of a blanket is that it can be folded in a great many ways to make the saddle fit more perfectly, or to relieve some part of the back which shows signs of galling. The usual size of blanket folds once lengthways, then once, or a fold of three crossways. Take care to have a fold, and not edges of blanket to the front, lest it ruck under the saddle.

THE AMERICAN STOCK SADDLE. As the Mexican wooden tree was never strong enough, the American has rivetted to the fore ends of the bars a fork of wrought steel which is surmounted by the horn which takes the strain in roping. In the twentieth century this arch has widened to make a larger opening clear of the withers, and it gives heavy shoulders to the saddle. To save weight the old square skirts

have been trimmed and rounded. The seat still slopes sharply from front to rear, throwing the rider's weight against the cantle. The horse-hair cincha (girth) is replaced by one of lamp wick, which causes less irritation. The latego or strap to take the purchase in cinching up the saddle has been replaced by the English strap and buckle to save time. There is a loss, however, in efficiency, because the old double-rig saddle with two cinchas (the second for mountain use and for bucking horses) had two pair of rings, and one was able to sling a single cincha forward or aft in case the skin showed chafing. A centre-fire rig is never so adaptable for various kinds of use.

STIRRUP. The word means mounting rope, and the ideas of adjusting the rider's balance, and of locking him against the cantle are only after-thoughts. In great cold a steel stirrup would cause dangerous freezing of the feet, and in great heat the metal is apt to burn them. Hence, in Mexican practice, the use of a hard-wood stirrup with a leather floor, and to guard against acacia thorns this is enclosed in a leather box called the tapadero. American practice has dispensed with the leather, and lately reduced the bent-wood stirrup to a mere ring, so large in some cases that the foot

will go through, and thus expose the rider to a risk of being dragged to death. The men of to-day are less practical than those of the old real frontier.

THE AUSTRALIAN STOCK SADDLE. The Australian stockman has done all that was possible to enlarge the bearing surface of the English saddle. He has also added pads, on the same principle as those of a lady's saddle, to retain the knees. The first flight of horsemen have their saddles made with the leather inside out, because the inner surface gives a better grip. By removing the stuffing down the middle of the panel they make a groove to take the leg. Thus by ingenious makeshift they have evolved a practical equipment for their sound, straight-leg horsemanship. As horsemen their best stock-riders are certainly not surpassed by any men of our race, and when one considers that their walers are larger and more powerful than the general stock of North America, Australian rough-riding must be rated even above the American. I notice, however, that when they use American equipment they seem to like it better than their own.

THE RECADO. A careful analysis of the Argentinian equipment shows that it is the home-made

effort of a first-rate horseman to produce a practical, weight-distributing saddle. The best and most improved forms, however, lack the strength of the Mexican rigging, which the Mexicans themselves reject if they can afford the North American.

THE McCLELLAN SADDLE. So far as I remember this model it made no pretence of weight-distribution, while it was coloured black, an excellent device for hiding defects in leather. The saddle was much praised in the United States Army, and may account for the failure of mounted troops to rival the mobility of range horsemen.

THE BITT. Because our own eyes are intended for long sight, we are apt to imagine that the horse has the same habit of studying the horizon. Yet when one lives with a range horse one discovers that he has never seen or imagined any such thing as an horizon. Everything beyond a hundred yards is blurred ; but if he were in the habit of reading the newspaper he would hold it about six feet from his eyes, for within that distance his sight is in better focus than our own.

His eyes differ from ours in having also a much wider angle of vision. One might compare our eyes to a brace of guns in the fore

barbette of a warship ; and the horse's eyes to two guns thrown out on sponsons wide of the ship, so that they can be swung round to cover the whole horizon. See how the horse's head is raised so that his own body does not intercept his backward sight. See how the head widens to place the eyes as far apart as possible, while the skull tapers upwards to give him a clear view of the sky, and tapers downwards to give a clear view of the ground. There is nothing in the whole sphere of possible vision which the horse cannot see by lifting and lowering his head.

The intention of the eyes, then, is not to see the distances ahead, but to scrutinize at close range all overhanging branches of the trees, the minutest details of surrounding bush, and most especially with microscopic detail everything underfoot.

Everybody knows that the horse is clever in avoiding the earth heaps made by burrowing animals, but I think there is also reason to believe that he can distinguish by relative dampness or dryness, and plant growth of the soil those tunnels and chambers of badgers and other ground game which do not reach up to the surface. It is only at full gallop that he fails to see the surface indications of blind

burrows, and is apt to blunder into them with disastrous results both for himself and for his rider.

But what has all this got to do with bitts? We must advance the argument to a further stage.

In the eighteenth century the Evangelist, Richard Wesley, rode on his preaching tours some seventy thousand miles on English highways. Because he could buy them cheap he always used stumbling horses. As he rode he would let the rein drop while he read the Bible, and presently would find the stumbler cured. There are some horses, he said, who will stumble over their own shadows, but nearly always a slack rein will cure them. Then one can sell them at a better price, and so make money to pay the expenses of travel.

To prevent stumbling, the range man trains his horse to slack rein, and in this matter reverts to an old war practice. The steering of horses by the knee is most excellent horsemanship.

Because I lacked the suppleness for steering by the knee it has been my practice to let the rein lie on the horse's neck. If any steering is needed, it is easy to have the two sides of the

rein tied in a half hitch, and, holding the knot between thumb and finger, to slap the rein on the side of the neck to show which way one is going.

Only if the horse needs handling one rides him on the rein with the utmost possible gentleness of the hand. But if the bitt comes into serious use it is better to have one which will lock on the lower jaw. I find my broken-bar snaffle pulls up a bolting horse in about five jumps, but so far only one or two out of many horses have needed so much severity. The range horse rarely pulls, and I scarcely remember seeing a double rein in use among range horsemen.

The greatest disadvantage of the rein is that it serves like a telegraph wire to carry the vibrations of fear. I prefer to use a voice which I can control rather than a hand which is apt to betray me. A low-pitched, quiet voice is very useful if one's hands are rough ; and the training of hands is a grace limited to civilized horsemanship.

There is a certain pattern of headstall which has the cheek strap coming down to a piece of brass which is best described as a D or squared ring. The nose band ends at the front side of the squared ring. The chin piece ends at the

after side of the squared ring, and carries the end of the headrope. From the bottom side of the squared ring hangs a snap to take the ring of a snaffle. So one keeps the headstall on the horse, and snaps the bitt on or off.

The advantage of curb bitts seems to be mainly in dealing with dangerous, or very powerful horses, or for an additional delicacy in steering ; but range men prefer to make appliances as simple as possible, and rather dread a complicated gear which may go wrong in sudden emergencies.

SADDLE WALLETS. For the general purposes of travel I carry in the wallets a tin of gall cure, a medicine case containing chlorodyne, and tablets of quinine, carbolic acid, cascara, a salicylate and permanganate of potash, with a lancet, forceps, surgical needles and silk, and a dressing ; a mosquito salve such as oil of pennyroyal, and some netting ; a toothbrush in a case, soap in a tobacco pouch, and a towel ; toilet paper ; a little sealed bottle of matches for emergencies ; an emergency ration such as cake chocolate ; luncheon ; something to read ; notebook and pencil.

THE HORSEMAN'S DRESS.

PROTECTION FROM LIGHT. In the history of the North American wilderness there are

three very distinct phases. The buckskin period of heroic adventure ; the period of blue shirts and overalls marked by chaotic disorder ; and the period of yellow khaki and brown clothing with orderly progress.

The period of blue clothing, however, was one of perfect law and order in the wildest parts of Canada ; of comparative disorder in the North-Western States, and of total chaos in the South-Western deserts. Even in Western Canada, suicide was common, and terrific drunks would seize in a moment upon whole communities ; but the Mounted Police, wearing scarlet, kept their discipline so that homicides were almost invariably hanged, and robbers imprisoned with prompt efficiency.

In the North-Western States, the suicides, drunks, lynchings, robberies and homicides were considered as privileges of a free citizenship. There were vestiges of government.

In the South-Western States, the only law was that of the revolver, and duelling took the place of government.

In the three regions the amount of disorder varied precisely with the intensity of the sunlight, and lawlessness ceased with the introduction, at the turn of the twentieth century, of yellow, khaki and brown colours in clothing.

All this may be coincidence. The ¹ attitudes of the South-Western desert in the Northern hemisphere correspond with those of the South African veldt in the Southern hemisphere. Moreover, the population of the American desert region was about equal to the British Field Force in South Africa. The American frontiersmen wore blue, the British soldiers khaki. Passing from one region to the other, I was astounded by the contrast between the blue-clad frontier supporting four hundred riders by the single industry of robbery-under-arms, and the khaki-clad army which in three-and-a-half years scored only one act of robbery. The peaceful civil population was engaged in blood feuds, promiscuous homicide, and every kind of violent crime ; while the fighting army won the hearty confidence of the Boer field force by its chivalrous protection of the Boer women. In the one case crime was universal, in the other almost unknown.

And this may still be all coincidence.

The Great War is fought, mainly in latitude of scant sunlight. The German forces, clad in blue-grey, have made a practice of rape, slaughter of women and children, torture and murder of prisoners, sacking and burning of cities, bombing of unarmed folk, fighting

with liquid fire and with poisonous gas. The khaki clad armies have not as yet been charged with military crimes. The blue-clad French army has not fought among a foreign population, has not in fact been tempted or found a motive which makes crime attractive.

It is beyond the limits of coincidence that where large numbers of white men live an unsheltered life and wear a single colour, those dressed in blue are guilty—except the French—of violent crime, from which those dressed in compounds of red and yellow are altogether free.

To the blue, indigo and violet rays of light a white man's body is transparent as so much water. When he lives outdoors his health is normal so long as his body is sheltered by colours which beat back the actinic rays of light. If he wears blue, white, grey or any other colour transparent to these rays, they burn right through him, destroying all germs of disease, and so allowing the body to develop tremendous energy—the keynote of frontier life. After a few years of this, the actinic rays begin to destroy the tissues of the body, and nerves break down. The symptoms of neurasthenia are :

- (1) Hysteria, expressed in wanton crime.
- (2) Dipsomania, expressed in tremendous debauches following long spells of abstinence.
- (3) Suicide.

Every range man will remember how these three forms of nervous disorder have wrecked the lives of his friends, and how the best men were taken, not the weaklings. If so much disaster is avoided by wearing colours which protect the body from actinic burning, it seems a reasonable conduct to avoid blue clothing, and to copy the hues—such as dun, bay, or brown, which nature provides to guard the animals.

PROTECTION FROM CHILLS. To absorb sweat, all underwear should be woollen.

CONCEALMENT FROM ENEMIES. Man is the only animal whose figure is upright, cutting the lines of the landscape, and therefore conspicuous at a great distance. A single colour is therefore more easily seen than two blobs of colour such as a khaki shirt and brown trousers, or a bay shirt and dun trousers. As armies paint their guns in broken splashes of colour, men's uniforms should not be whole coloured if they are to blend with the landscape

THE HAT. The Red Indian calls the white

men "hat-wearers," and takes notice of our baldness. Savages who wear no hats are never bald. Why then should we wear hats? I think that on the range, if we began early enough, we should do well to let our hair grow for the protection of the head and the nape of the neck from the sun. On the old American Frontier the pioneers did grow long hair because a man with no scalplock was not worth killing, and therefore barred from councils of the Indians.

The primitive hat of the range was a disc of bison skin, sodden, and the middle, thrust into a hole in the ground, was filled with stones. A leather string laced round the edge kept the brim from flopping. A leather band fitted the crown to the head.

Later came a Mr. Stetson of Philadelphia, with a copy of this range hat in beaver-fur felt soaked in shellac, and so felted that the edges did not flop. A bootlace round the front of the hatband passed through an eyelet above each ear, and was tied with a hard knot behind the head. This prevented the hat from blowing away and let in air behind the head to ventilate the crown. Pinching the crown with four dints for the words North West Mounted Police, branded the cowboy Stetson as a

soldier's hat which was adopted in South Africa by most of the mounted Irregulars of the British Empire, and by the Boy Scouts who copied the design in felt of rabbit fur.

A rival type of slouch hat which flopped down all round was used by the ancient Greeks. Looped on one side it was worn by the Cavaliers of the British Civil War, looped on three sides it became the cocked hat of the eighteenth century, and on two sides, of the Napoleonic era, surviving in diplomatic uniform and those of naval officers and civic functionaries. Looped on one side again it was worn in the American Civil War, and by British Africanders and Australasians. Softened and not looped it replaced the stiff-brimmed Stetson on the American range.

SHIRT. It was among the Eskimo that I learned the philosophy of the shirt. These very practical folk wear a hooded shirt, close-fitting at the throat, wrists and waist. For summer the material is cotton or serge, for winter the warmest furs ; but in any case it forms a bag of air warmed by the body. The shirt then consists of an outer garment of skin or a textile fabric, and an inner garment of heated air protecting the vital organs. Opened at neck and wrists it is the coolest of garments,

closed it is the warmest for any given weight. In contrast a coat or jacket is open at the bottom, the front, the neck and the wrists, so that four times the weight is needed to produce the warmth of a shirt.

Military dress is always a belated copy of the civil costume in each period.

It is designed by a contractor whose motive is to obtain the handling of public money. It is approved by a military official who has never done a day's labour or a day's fighting with the weapons of the enlisted man. Hence the persistence of the Roman tunic which excels all known garments in cost, weight, the cramping of the lungs, and the disabling of the arms and shoulders whose perfect freedom is needed for wielding weapons and tools. For working or fighting it has to be removed.

The mounted civilian rides for pleasure in a coat, the mounted soldier rides for duty in a tunic, the range horseman rides for a living and wears a shirt. By the exercise of human reason the range man protects his vital organs at a fourth part of the cost, weight, and encumbrance to which the fashions have subjected the sportsmen and the soldiers.

BREECHES. The dress of a gentleman has always been that of the mounted warrior.

When plate armour had to be given up because it was no longer bullet proof its lining survived in the form of leather breeches. These leathers are usually whitewashed, but they are still worn by the British Household Cavalry, who are "Gentlemen of the King's guard"; by hunting men; by the mounted servants who used to be armed retainers and still wear livery as such; and in the *charro* dress of Mexico. They belong to the tradition of aristocracy.

The principle of breeches is a close fit for the inner surface of the knee and thigh, because with heavy material such as leather or cloth any wrinkles against the saddle will tear off one's skin and cause a deal of pain. With bent leg riding, the outer surface of the thighs had to be loosened, and this loosening has developed into monstrous puffed sleeves which expose the Englishman to ridicule on an irreverent stock-range.

TROUSERS. During the French Revolution, gentlemen in the town dress of the period, with knee breeches and silk stockings, had their heads chopped off, and all who valued their health took to trousers as an expression of liberal opinions. Trousers to the heels as distinguished from trousers tucked into boots

are still worn in Russia to indicate liberal views. An ultra-royalist is not content with long boots, but must add rubber overshoes to make his feet look large.

Away from the influence of English fashions, the horsemen of the world wear trousers ; of cloth in the Russian Empire and South Africa, of moleskin in Australasia, of duck in North America. Any kind of tight clothing which cramps the limbs is looked upon as an abomination.

Boots. Long boots were recommended by Xenophon to the Greeks, low shoes are older still. Both save the natural strength and spring of the ankle which is needed in mounting a horse, useful in riding him.

Towards the middle of the nineteenth century the increase of town life and improved paving made boot-tops worn under trousers appear superfluous in weight, cost and discomfort. Thus came the ankle boot as an economy and a comfort, but coupled with it was a lacing to "support" the ankle. To lace a man's ankle or a woman's waist is to replace with a merely stiff material the strong elastic muscles of the natural body, and sap the necessary health and strength which God has given.

In all outdoor life long boots ensure dry feet, and the top should reach the knee-cap to be of real use in wet ground, or when one kneels cooking beside the camp fire. The boot legs guard one against venomous reptiles and insects, and protect the shin bone which, for lack of any muscle, is liable to be broken by many kinds of accident. Lacing either a long or an ankle boot puts an end to free ventilation of the foot, making the skin to sweat, to soften, and in many cases to become offensive.

For horsemen the boot leg is a useful protection from the chafing of stirrup leathers.

In war the soldier who wears laced boots is obliged to sleep in them, whereas long boots, kept properly greased, are so quickly put on that it is safe to remove them at night. For infantry, the world's marching record was made by Colorado miners as volunteers for the New Mexico campaign. They wore long boots, as do the Russian and Germanic armies whose marching is said to be better than that of the French and British who have laced the ankle.

The boot leg should not be shaped like a bucket to catch rain as with the United States Cavalry, or like a stovepipe to cripple a man afoot as with British horsemen. Without being tight like the puttee for the production

of varicocoele, the boot leg should fit close. The ankle should be supple as a stocking, and "bellowsed" to make sure of suppleness. The counter should be of the hardest possible leather, thick, but fining upwards to an edge, and so made that when the man's foot spreads the foot of the boot, this fine upper edge, closes over the ball of the heel to prevent chafing. For the horseman the heel should be broad and flat, or high and tapering to prevent it from getting through the stirrups.

The boot-top of the seventeenth century came well up the thigh, but was turned down in summer for coolness, showing the brown inside of the leather. Later on this turned down top was replaced for smartness by a useless detachable cuff. For smartness also, the English leg was made rigid, disabling the wearer. Lately I went to a smart London maker for boots to suit my need of a supple ankle, flat heel, and modelled counter. The sales gentleman made me feel acutely that I was a cad, the workmen struck, and the proprietor corrected my design, revenging himself in his bill for the delay he caused me. It is in details such as this that one feels that the whole art of horsemanship in England has become a frozen convention, and is dying.

SPURS. The spur was a prick or goad, from Roman times down to the thirteenth century. With plate armour came a rowel on a long shank. This rowel has shrunk in Europe to a small sharp weapon which draws blood, but on the American stock range it has increased in size to an average of three inches. The larger the points are the more they can be blunted, and the less they hurt a horse. On the old American range an Englishman removed the rowels from his spurs or adopted the blunt rowel before he was considered fit for human society.

The rowel should be loose enough to rattle, so that at night one may go to one's horse in pasture, and, knowing the sound of his master, he will not run away.

A gentle spur is used to encourage and not to hurt a horse, to bring him to attention, to aid in fine steering. It may be locked in the girth so that, holding on by one leg one may lie behind the horse's neck when under fire, or pick up a rope from the ground.

NECK CLOTH. A kerchief loose round the neck saves the top of the spine from sunstroke. It should be of any colour not containing blue, of the lightest silk for use as mosquito bar at night, and twenty-six inches square for use as a

sling, bandage, or tourniquet in case of accident.

SHAPS (from Chapareras—protection from chapparal or thorns of acacia). These are leggings reaching from waist to heel of heavy oiled leather. They differ from trousers in having no seat or fly, but consist of two trunks each laced or buckled down the outer seam of the leg, and attached at the waist to a half belt. The two half belts are tied together in front with one turn of a leather string, ready to break apart if they get caught on the horn of the saddle in bucking, and fastened again with buckle and strap behind.

The woolly or hairy fronted shaps made for snowy or wet districts are more plentiful among tenderfeet, showmen and cinema actors than they ever were upon the modest stock range. The usual pattern is of plain brown leather, nearly black with use. It is sometimes fringed, or ornamented with silver dollars or even twenty dollar golden pieces down the outer seam.

The uses of shaps are to give a grip in the saddle, to shelter the legs from heat, cold, rain, snow, to serve as armour against kicking, biting, scraping, backfalls, rolling and other diversions of horses, the horns of cattle, rocks,

thorns, snakes, scorpions, tarantulas, rope abrasions, grass fires and other little discomforts. Their excellent comfort in the saddle, and in lieu of blankets at night, would be enough to justify their use, but without them one would be hurt or even seriously killed in course of the day's work. As they make walking difficult they are useless for all the purposes of war.

ARMS. On the great ranges Romance is just as prevalent as sunshine, and Emotion blows as freely as the wind, but in this study we have to do with Reason. In cold blood we are trying to study equipment and methods of men whose lives depend upon sound, practical, unbiassed common sense.

When a fellow takes to the range what are his motives? If he goes out to hunt for trouble he will do well to buy a large, well-balanced, accurately-sighted, blued revolver of a simple pattern not readily clogged or damaged. He will devote his leisure for many months to practice at all ranges, in all sorts of weather, in light and darkness, afoot and mounted until he can fire a double-roll fusillade. If he gets killed at practice, so much the better for the public. If not he has only to take to the range and make himself a general nuisance

until he meets a better shot than himself. I never met a man with more than twenty-seven notches on his gun-stock, but have known plenty who took an honest pleasure in blotting out unnecessary gun-fools.

If a fellow takes to the range, who is not in search of trouble, but merely intends to earn an honest living and make a decent home, he is better without a weapon. When I was a younger fool than I am now, and took a delight in revolvers, and bluffed with a gun, it nearly always got me into trouble. I found that it was a poor thing to shirk the first obligation of manhood, which is self-reliance, and sink to mere dependence on a weapon.

Nobody who can possibly run away is fool enough to encounter single-handed a homicidal maniac on the war path, a gang of vigilantes or desperadoes in a nasty temper, or a hostile tribe of savages. Against such odds the use of a weapon in the open is merely suicide. The first thing needed is an inward prayer which makes one's nerve quite steady. A serene manner fills the enemy with misgivings that one has unseen support. To throw one's weapon to the enemy as a gift is to surprise him into talking. Once he begins, the more vociferous he is, the sooner he talks himself out.

A maniac temper will evaporate in talk in about forty-five minutes, but savages will sometimes last two hours or more before they are quite run down. After the first laugh one may walk away in safety. It is not safe to be seen in the state of collapse which follows the overstrain.

The killing of live creatures or even men has always been abhorrent to me. I am not sure of having murdered anything bigger than a crow with a broken leg, who had to be knocked out with a stone as an act of mercy. Not being a sportsman I may not advise on the use of weapons for sport.

WEAPONS. There are three weapons used only by range horsemen. The lasso, known on the range as The Rope, consists of a noose which is spun by a delicate play of the thumb, thrown to its length, and the strain taken by saddle and horse as it catches a running beast. We share this practice with the ancient Peruvians, Sarmatians, Sagartians, and Scythians, and the modern Tartars of the Asiatic steppe.

The bolas are three egg-shaped weights connected by as many plaited strings with a rawhide rope, and thrown like the riata to catch wild animals. This instrument belongs to Patagonia and the Argentine pampas.

The stock whip. This is an Australian development of the switch. It consists of an 18-inch wooden tapering handle, a keeper of kangaroo hide, a 10-foot thong of kangaroo hide in a tapering 12 or 16 plait, an 18-inch tail of green hide, and a plaited cracker of sewing cotton. At a range of twenty feet one flick knocked a revolver out of my hand and lashed my wrist to the thigh, making me a disarmed prisoner, yet causing no more pain than the brush of a fly's wing. It convinced me as to the usefulness of this weapon.

III. THE WAYS OF RANGE HORSEMEN.

On one occasion it was my privilege to assemble seventy horsemen whose united experience of the stock-range covered the grass lands of Asia from Mongolia to Hungary, Eastern and Southern Africa, all states of Australasia, Patagonia, the Argentine, the Llano, and every state and province of the open pasture in Mexico, the United States and Canada. Among us we compiled a brief text defining our ideas of range as distinguished from civilised horsemanship. The text was printed as a chapter on "The Horse" in "The Frontiersman's Pocket Book" (John Murray), which I compiled and edited on behalf of the Legion of Frontiersmen. The present volume

is merely an application of these range principles to the study of horses and horsemanship.

The pretension of range horsemen as a class is to earn a living by the use of cheap working horses, riding with a weight-distributing equipment and pack transport, while we base our mobility upon a herd of remounts.

For pleasure horsemanship our feeling is one of admiring envy. No men are better able to appreciate the incomparable gallantry and elan of the hunting field, especially in Ireland, the beautiful spectacles afforded by racing, horse shows, and tournaments, the grand pageantry of state functions in European capitals. Even such pretty futilities as Portuguese bull-baiting and the Haut Ecole of France appeal to us as horsemen. As to military horsemanship we have an unbounded admiration for the fine driving of the Royal Horse Artillery, and the obstacle riding of the Mexican Regular Cavalry. On the other hand we are not stricken with awe at the circus tricks of the Cossack, although we may be surprised to see a luggage strap used for girth. Nor are we emulous of the horse-killing man-endurance rides which used to be considered good sport by European cavalry. We can do the little circus tricks ourselves,

and make our endurance rides without killing our horses.

Among ourselves we are more critical. The Mexican ranchero for example wears a revolver on the belt, a sword on the saddle, a silver bridle, a suit of leather beautifully laced with gold or silver, and a most prodigious hat. But do these fine feathers make him a fine bird? Or is the prancing arch-necked horse made sprightly by pinched shoes and a spade bitt?

By contrast the Boer is the most slovenly of horsemen, both in his old slop suit and in his flapping gait, but in scouting and fighting by far the best instructor we ever met, and either as enemy or friend we love his manhood. If horsemanship is an expression of manhood, we do not mind the form if we can get the fact. More manhood goes to the making of one Boer than to a hundred Mexicans.

Searching for the elements distinctive of range horsemanship, as contrasted with the pleasure, the military and the working horsemanship of civilization, a few essential things come clearly into view.

ROUGH RIDING. When a range man is asked if he can ride, as a matter of course he says "No." But if he really wants to come up against the champion outlaw horse of the

neighbourhood his denial is not emphatic. Like a professional singer asked for a song, he excuses himself, and pleads to a certain dryness in the throat, but, when the money inducements are sufficient, owns up that he thinks he can ride.

The rough riding of the range is incomparable, but as the broncho buster is usually smashed internally if not killed outright within three years of practice, this worst possible method of breaking a horse is lacking in practical value.

ROUGH-DRIVING. Our rough-drivers are perhaps the greatest horsemen living, and their feats are the more glorious because there are no spectators to give the stimulus of their applause. A single example may be permitted here :

Constable Harty, of D Division in the Royal North-West Mounted Police, was driving a four-horse team with a waggonette, his passengers being the Earl and Countess of Aberdeen, Viceroy and Vicereine of Canada. Fording one of the fiendish Alberta rivers the near wheeler lay down and drowned herself, while the waggonette, half afloat, was being tilted in danger of capsizing. The teamster swam under and with his knife attempted to cut the

dead mare out of harness. Failing in this he climbed up, stood astride with bent knees on the waggon seat, and lifted the team up the river bank to safety while the dead mare dragged under the wheels.

So varied are the styles in horsemanship that nobody pretends to leadership, and every man of real experience counts himself a student rather than a master. Only the other day an Instructor in Equitation showed me how to trot a horse straight down a steep slope of grass, explaining it was so good to supple the animal's shoulders. Of course I always knew I was a fool, but never before had I realized the abysmal depths of my own ignorance.

So far then as an old fool may be permitted, I venture to submit some gossip on the average range practice of a day's march in the wilderness. The equipment for horse and man is already dealt with, except in regard to packing, a subject which would need a special volume.

In Mounted Police regiments there is a rule that no constable may travel alone on journeys exceeding a day's march. It is a good rule, because a chap may get hurt or be left afoot, and so perish for lack of a helping hand.

It is easy enough to warn a fellow not to travel alone in wilderness, but quite impossible

to take even one's own advice. Most likely nobody else is going in that direction, or the fellow who offers his company would make a first-rate stranger. But in any case three horses will travel better than one, and by changing about one gets a longer march. That is why one generally travels with ride, pack and spare mounts. As to the pack, the load at which an average animal can keep pace with the mounted man is one hundred-and-twenty pounds, and with such a cargo should not be stopped either by swamps or rivers, bush or mountains. The weight may seem excessive for one man's supplies, but it is always worth while to carry a ration or two of grain.

An advantage of the three-horse method is in the encouragement it gives them on the trail. They are quick to scratch up friendship among themselves, are never happy except in company, and running together may take their man into fellowship.

BUYING. So long as the American range was really wild an unsound horse was palmed off on the nearest townsman, or shot, or turned loose as worthless. To-day the proposal to buy a horse in any western town brings forth are amazing collection of relics, cripples, colts, curios, and criminals. The old timers will

not sell except to horsemen, but when they offer a horse one may buy blindfold. Except in dealing with real frontiersmen one takes a horse on approval or not at all.

After the main essentials of a pure heart and four legs, I look for large eyes with no white showing, and a broad forehead. If a horse is nervous when approached, he cannot be relied upon in emergencies. If he is less than seven years of age he is not fully matured for work which needs endurance. I prefer a gelding as being less flighty, less apt to break back than a mare. I will add dollars to get a glutton, close quickly with the offer of a horse in really hard condition, refuse a rough-gaited trotter as a gift, and cannot be paid to ride a beast who bucks. As to the 'points' by which a civilised horseman judges horseflesh, they are all very nice if one has plenty of money. The prices have trebled since the turn of the century.

MAKING FRIENDS. There are many little kindnesses which help to ease the labour of a horse. He has just as much pride as a man in smart equipment, has vanity enough to relish a glossy coat, to show off in company, challenge for admiration with gallant carriage of his neck and tail, and prove himself much

swifter than his fellows. Pet him a little and he will insist upon being fussed with. Give such dainties as sugar, apples or carrots, and he will ever be nuzzling at your pockets. His low, soft love call for greeting of a morning is well worth while for any man to earn. This is not given to the man who thinks of a horse as "it."

THE SADDLING. After throwing the saddle on, pass the hands all over the blanket under the flaps to see there is no rucking. Lift the blanket into the arch of the saddle to be sure that no pressure will rest upon the withers. Shift the saddle aft until quite sure it is free of the shoulder blades. Girth up, and be sure the horse is not holding his wind. If there is doubt the off knee in his stomach will make him relax his lungs.

MOUNTING. The weapon, be it spear or rifle, must be wielded with the right arm, so the rein is held by the left hand. To secure the rein with the left hand involves mounting on the near side of the horse. There is an advantage, however, in departing from universal practice and training the horse to be mounted from either side. One may be hurt and unable to mount on the near side when there is peril in being left afoot.

THE FIRST MILE. Walking the first mile supple the horse and eases the harness. A horse who holds his wind can then be butted with the knee in his stomach while the girth is pulled up to the proper notch for safety.

PUNISHMENT. If one thinks of a horse as a little child one cannot be far wrong. One does not flog a child. Discipline there must be with horses as with children, or both grow worthless, but punishment is the surest possible sign of the man's incompetence, for the horse rarely understands the motive, or understanding becomes mutinous. Nine times out of ten after punishing my horse I have found out that I had been myself in the wrong by saddling too far forward and cramping the shoulder-blades, by some defect in putting on the blanket, knotting the headrope badly, or failing to watch the farrier's work in shoeing. The seeming misconduct was due perhaps to agonizing pain, as in one instance from a hidden ulcer. So when my horse forgets his manners, loses his temper, or goes badly, I examine my conduct to find where I am to blame.

It is an outrage and disastrous to the horse's morals to strike him in front of the saddle. The exceptions to that rule are for great experts only.

PACES. Whether the wild horse trots, is not a subject in which the range horse has given me any guidance. In handling stock he usually goes on grass and prefers to canter. In travel he usually goes on a road, and distinctly prefers to trot. From careful watching I doubt if he likes trotting on grass, as the hoofs are apt to brush and may stumble against the turf. A canter on road or very hard ground jars him, and is likely to cause injury to feet and legs.

There are certain artificial gaits most variously named such as the tripple, rack, pace, and side pace adopted I think under compulsion of lazy horsemen who find them comfortable. I have known horses using such gaits to lag miserably until I persuaded them that trotting was permitted, after which they cheered up and gained in speed.

As a slow walk tires both man and horse much more than the trot or canter, it is easy, by riding on the rein and using a little persuasion, to train an average animal in fast walking.

On the whole then a steady alternation of trot and walk, making the day's gait about five miles an hour, is the best economy for journeys.

On marches exceeding fifty-five miles a day the canter, trot and walk become alternate

gaits, but journeys must then be broken with days for rest.

HILLS. Trotting or running a horse down hill is a matter for high-powered animals. With ordinary horses the down slopes must be reserved for walking, the level and upward slopes for trotting. The longer and steeper hills involve walking, but even in them there are dips and levels which permit one to vary the pace, nursing the horse through the march in the least possible number of hours. It is the flagging, not the brisk day's work, which causes most fatigue.

SEAT. I have seen horses prosper under all the different and possible methods of decent horsemen, and do not believe that form makes any difference. From the Red Indians of the plains I learned to sit skin tight and upright at the trot and canter.

Having no voice to boast of, I test my seat at the various gaits by singing, and if there is any sign of quivering in the notes, look well to my grip and balance, lest I jar the horse. His ears express horror, but his kidneys seem at peace; and I have usually fattened thin horses on my journeys. The skin-tight seat is that which is practised and recommended by all range horsemen.

EASE. General Sir Robert Baden-Powell kindly advised me as follows :—

“ Letting men sit side-saddle on a tired horse is the easiest way of giving it a sore back. At walking gait it is far better for the rider to dismount and walk. The loup or lobbing canter is the easiest pace for man and horse. Except a continuous walk, the round trot is the most tiring. Frequent cantering and walking alternately—the rider then going on foot—is the way to get over the ground in going a long distance.”

The above note is one of high authority as applying to English equipment ; but I found it received with a certain lack of respect by men using a weight-distributing saddle. We all sit side-saddle when we please, or more often ride on one thigh or the other. None of us have seen sore back except with lean or exhausted horses, worn out saddlery, or in cases of gross neglect.

The range man does not look upon riding as a formal parade, but likes to practise circus tricks, or lounge at ease while he smokes, reads a book, sings, or plays some musical instrument. I have seen the cowhand wile away the time by eating a quart of pickles. For my part, a luncheon from the wallets is part of the

procedure of every pack drive, followed by a comfortable nap in the saddle. Horses often doze at a walk, even, I suspect, at the trot, and a nap for man and horse adds a great deal to the endurance of both.

As to going afoot, it takes a very steep down hill track to enforce such a thing upon me. Rumour says that we will walk half a mile to get a pony from pasture in order to ride a hundred yards on an errand. But to be afoot is for the range horseman the last depth of calamity and degradation.

My last experience of this was a traverse of the Canadian Rockies, when my partner and I rode along the bed and bars of a river until we were washed away. After that we took to the bush, a wonderful labyrinth of deadfall, beaver swamp and snowslides, which we managed to climb through by following the tracks of some wapiti. We had to work about twenty hours a day, and the four days reduced our clothes and boots to rags, but our luck was better than that of another party of four men who tried the same pass that season and were not heard of afterwards. I will not tempt young travelers by giving them the name of that pass.

GUIDANCE. While the range man never walks, but makes the saddle his home, and

lives at ease, it would be an error to suppose him unobservant. In wild countries one's life depends on alertness.

Few range men trust a compass, which may be lost or broken, is hard to read at night, difficult to steady at any time, and apt to point at one's gun. Point the hour hand of your watch at the sun, and half way to XII is south (for the northern hemisphere). If the sky is overcast polish a coin or finger nail and hold a match or a pin upon it vertically. The upright match will cast a shadow made by the unseen sun.

So much for the rule of thumb, but one's real reliance is on the indications of the landscape : the reading of trees and bushes as shaped by the prevalent wind ; the reading of rocks or tree trunks for any mosses or lichens which grow on the side (north for northern hemisphere) on which the sun does not shine ; and sundry other signs local to different regions.

The constant habit of locating north grows to an instinct. In Petrograd, as a stranger unable to ask questions or read signs in Russian, on level alluvial land, in a thick winter night, without having seen one inch of the route before, I was able to walk by the shortest

cut three and a half miles directly to my hotel.

If it is vital to know north, it is equally important to read country ; to see by the slopes of the ground the direction of streams and watersheds, and to observe the phenomena of crossing or converging routes. One learns in time to forecast the nature of the country beyond the horizon.

Most important of all is the difficult reading of tracks and the glints on grass, also the movements of birds and animals which in an arid country are signs for finding water.

For the rest, it is useful to note the tracks on the trail showing who passed and when.

It is wise, on meeting a man, to observe his horse brands, equipment, and all the many clues which show who and what he is as distinguished from what he says. It is a gross breach of taste to ask him a personal question ; but by knowing all about him one may gauge the value of his trail directions. There is indeed a need for cautiousness, for not one man in a hundred gives accurate directions which can be safely followed. In central Colorado there used to be a lady rancher whose copious trail directions had endangered so many travellers that, for a radius of two

hundred miles, approaching horsemen were always warned by the neighbours to be deaf to her siren voice.

GUIDES. Much as I like the savage as a man, I am cautious in engaging him as guide. On two occasions I arranged that my guide was to be shot if he showed up at home without my written release. Knowing that detail, my first guide was a success, but the second left me to die, and went home without my certificate.

Rather than put one's trust in guides, maps, trail directions, the compass or any other form of vanity and vexation, it is wiser to rely on common sense in scouting. And there the indications given by one's horse are always valuable.

SCENT. It is doubtful if man or horse is ever perfectly healthy in civilization. Both suffer from chronic catarrh, so that the smaller animal has to carry and use a handkerchief. Under range conditions the kerchief is more useful round one's neck, for the nostrils are dry, and, both in horse and man, the senses are more active. At half a mile I have smelt a mountain river—like a wet knife. Once, at about five miles on a windless day my two horses snuffed a fresh pool and bolted for it at

full gallop despite my frantic protests at their apparent madness. Considering that we were lost in sand-rock desert, all three of us owed our lives to that small distant smell.

The more vivid perfume of cattle I have caught up easily at four-and-a-half miles on the wind, but by their conduct I think my horses had that savour some miles before it reached my duller senses. I think the scenting powers of a horse are about ten times as strong as mine.

SIGHT. Although short-sighted, I have, with the aid of eyeglasses, bringing my vision up to normal, seen waggon dust at sixteen miles, a colliery smoke at twenty-three miles, and detail of a mountain scarp at seventy miles in the clear prairie air. So far as I could get any direct evidence, I never knew a horse to see anything at much more than a couple of hundred yards. It seems to be only in civilization where the smells and sounds are bewildering, that the horse becomes long-sighted up to perhaps a mile.

HEARING. The value of a horse's sense of hearing as compared with that of a man is very difficult to judge. On a still night I have heard men's calls from behind double windows at one and a half miles ; and am not at all sure

that an average horse beats that. And yet, judging by the constant signalling of a horse's ears which point at every sound, I think his sense of hearing catches vibrations above the register of human ears, and many notes at close range too faint to impress our senses.

Whatever a horse may smell, hear or see, he points out with nice gestures of the ears and nostrils which are of infinite value for a man to read and understand. They convey to the practised eye all sorts of warnings and useful little hints. It is the training in peace of the habit of observation which makes the scout for war.

THE FEAR OF SHADOWS. Once I took a range horse into a forest where there were flocks of sheep, herded a good deal of nights by cougars (*Felix concolor*) who prospered on their mutton. These cougars used to come round my camp, liked it, I think, because there was no gun-smell, and sang most wonderfully, sitting so near that I could see the gleam of firelight on their eyes. I liked them, but my horse would stand astride the fire trembling. I tried to explain to him that this was vanity, because he was really far too thin to be edible. While the cougars had nice fat sheep for the asking, why should they care for horse bones! But all the signs he gave of loneliness and fear

I have seen many a time since then when I have taken range horses far into the woods.

HALTS. If only to give my horses a chance to stale and, with a gelding, to make sure that the sheath is clean, I make a short halt after each two hours. At every halt the genuine horseman throws his rein to the ground so that a horse will be tripped if he attempts to break away. Range horses are trained to stand to a thrown rein, and if necessary are given a sack of earth to drag until they learn the wisdom in obedience. If one has to tie the horse to anything, a supple bush is better than a rigid tree, lest he pull back with his whole weight for the purpose of breaking the rein or rope by which he has been fastened.

In my short halts I always hold the rein while the horse gets a bite of grass or a little water. The reason for this is that he may be suddenly frightened by a snake or a bustling squirrel, and if he breaks away it might be awkward to be left afoot : so many men have been left afoot and perished.

In the greatest heat one may water horses fully if they stand knee deep in pool or stream ; but if they drink their fill they go sluggishly afterwards and need to drink the more. For a man a sip of cold tea allays thirst better than

a pint of water, and for neither the horse nor the rider is it wise to drink to repletion until after the day's work.

In lone travelling with a pack horse I always make the day's work in a single drive rather than waste time unloading and loading the pack in a day which may prove too brief for the finding of a camp before dark. The earliest rising, the most urgent driving are needed to make sure against a dry camp, or being caught in bad ground by the fall of night.

THE NIGHT HALT. In country where the grass is eaten for miles surrounding watering places, or where there is danger from hostile savages, I always drive on from the evening water until I can camp in safety on good pasture. Also one needs a margin of time to walk the last mile or two, bringing the horses in cool at the end of the day's work.

Rather than let horses stand shivering in a wet or cold gale, it is better to march, and keep travelling until shelter can be found.

In great heat it is better to travel at night, but one should be in camp from about 12.30 to 3.30 a.m., the usual sleeping hours.

As to horses in camp, one must throw them to pasture beyond the camping place, so as to hear them passing if they attempt to break

back. It may be necessary to hobble or even picket one of them as a precaution, or if they lack water to hobble all who cannot be picketed. If any animal is to be hobbled or tied up, the mare comes first.

In forest, where horses are ill at ease, especially if pasture is scanty, I hang a bell to the neck of every horse, and camp at some spot where the back trail can be fenced, then sleep against the gate. On some occasions I have watched all night.

Where flies are bad, it is kindly to bank a fire with damp herbage which makes a smoke in which the horses can shelter. It is in forest and fly country that one has greatest need of a few feeds of oats in the pack, or even slung to the saddles.

If a horse is sweating and exhausted, I rub him down with whiskey or any other form of alcohol, because its rapid evaporation cools and refreshes him. A little alcohol rubbed on the part heated by the saddle enables one to feed grain even in short halts.

For cold and exhaustion I give sugar, if possible in the water. The carbon is fuel which enters the blood, and so becomes exposed to oxygen in the lungs, where its burning produces the heat which warms the body.

In hot weather, oatmeal and sugar in water make a refreshing drink useful to horses as to working humans.

If a horse is leg-weary and stiff, a rub down or massage with liniment slacks the strung tendons.

SORES. I never unsaddle without making a careful search for water blisters or any sign of chafing. These found in time can be marked with axle grease, which registers a black spot on the sweat pad or the blanket. The blanket can then be folded in such a way as to relieve the pressure, or a bit of sacking shaped into a ring to enclose the threatened spot beneath or between the foldings of the blanket. The same kind of padding can be made under the girth for the relief of girth galls.

Despite the utmost care, horses in soft condition or when underfed, or wearing harness which has hardened or warped after long spells of wet, are liable to sores. I have cured most terrible cases by a daily practice of riding the patient to sweating heat, then suddenly unsaddling, and lashing on cold salt water. The various copper ointments known as gall cures are worth their weight in gold so long as one works the horse, but have the defect of forming a hard scab which breaks away before

the wound is ready. One abscess caused by a warped saddle tree defeated me altogether and put the animal out of action for four months. As to sores in the starvation of the northern forest, the story would be too terrible to tell.

CRACKED HEELS. In cold weather, if we do not dry our hands before a fire after we have washed them, we are liable to chapped skin. Wet followed by cold, especially from muddy ground, causes cracked heels. The prevention by thorough drying after every wetting may be impossible and this form of lameness is difficult to cure. A washing with soft soap, and a thorough drying, followed by packing in grease is the best range practice I know of, but does not always succeed.

FEEDING. In making the feed as varied as possible I have fallen into error more than once. A bran mash, for example, is best when there is no march on the following day. I made a horse dangerously ill with scouring by turning him into an abandoned field of green and standing maize. On another occasion, turning hot, wet, exhausted horses into a shed for shelter from a storm, I found out too late that a sack of oats had been spilt upon the floor. The result was colic.

Feeding horses to perfection needs a touch of artistry. Small feeds of grain, for instance, by making the animal ravenous for more, enable one to double his allowance without stalling him. Salt, sugar, carrots, apples, help to keep up his interest in life, as rewards to be earned, and tokens that one really cares for him. If a horse is scoured a dose of salt water will help him. For colic one has to lead him about while the pain lasts, and above all things prevent him from rolling, which is sometimes fatal.

It is long now since I had to dispense with a fire for fear of advertising my camp to hostile savages, and the old glorious range in North America is woefully shrinking before the advance of settlement. The rancher who made the traveller welcome as a guest is replaced by a surly farmer who takes money for rental of his barn-yard. The range horseman who used to own the town when he rolled in from the plains is now considered, as Europe views the gypsy, with suspicion.

One trait of the range rider recalls the past. No man lays a hand on our horses unless he wants a fight. It is a rule that the horseman tends his own stock so long as he is able to stand. He must be very ill or badly hurt before he surrenders that.

At range stables where there is a dust bath one unsaddles on arrival to let the horses roll. At town stables where there is no dust bath one slacks the girths, removes the bitts, gives half a drink, and some hay. An hour later when the rider is fed he comes back to cool horses who can be unsaddled without fear of any blisters which might turn into sores. Then comes full watering, and grain. While the horse is busy eating, pick out his feet, dry out wet heels, scrape off mud, and wisp down. After the stall is cleaned, and bedded, and the manger filled with hay for the night, the horse-man is off duty ; but a range man prefers to sleep in the barn loft in order to save his horses in the event of fire, and be up early with the morning grain.

IV. RECORDS.

Writing without notes or books, it is difficult to recall the records of long distance riding which form the best tests of endurance, and so give one a standard of value for man, equipment and horse. Driven to rely on memory I note first that the historic records are vague, giving but scanty data. Everybody knows for example that Bucephalus (Ox-head) the Thessalian charger of Alexander the Great was a horse of notable endurance, but the question

is—what could he do on continuous journeys ? Charles XII. of Sweden rode in a hurry from Constantinople to Dantzic, but what was the time for that distance, and was it done by one horse or by reliefs ? Dick King a despatch rider, made good time on one horse from Port Elizabeth to Port Natal, but I do not remember his gait for the six hundred miles. Somebody who was not Dick Turpin, but possibly another rogue of the same name, made a single march from London to York on a mare called Black Bess, but that was a horse-killing feat, as much disqualified by decent men as the Inter-Army horse-killing rides which disgusted the horsemen of Europe not many years ago.

In the nineties Lieutenant Peschkov, a Cossack officer, rode a Dun pony from Vladivostock to Petrograd. This at any decent gait is a world record for a road ride, on a route with hotels at every stage. But legend makes the gait thirty-eight miles a day for six thousand miles, and on that I have my doubts. Working across country I found that my best horse did one thousand three hundred and seventy miles at twenty-one miles a day ; and the next best one thousand and forty at the same pace ; but on the whole trip, made with four successive

mounts, the three thousand six hundred miles took two hundred days. This works out at the very poor average of eighteen miles a day. But for delays in buying horses the average would have been twenty-one miles, and I doubt if any horse outside of fairy tales can do much more on a six thousand mile journey.

Apart from the vagueness and doubtfulness of the stories, the standard which they set up for comparison seems to be very low as compared with the annals of range horsemanship. The following records were made for the most part with half or three-quarter bred range raised horses, and all with weight-distributing saddles.

ONE DAY RIDES. A friend of mine, an Australian stockman, with a weight-distributing saddle, and leading a pack animal, crossed the state of Victoria from the Murray to Melbourne, one hundred and forty-three miles by the route taken, covered in twenty-six hours.

A constable of the Royal North-West Mounted Police of Canada with a forty-two pound stock-saddle on a buckskin gelding, rode from Regina to Wood Mountain Post, one hundred and thirty-two miles by sunlight, and the horse bucked him off at the finish.

On enquiry I found that the trail between Forts Macleod and Calgary, Alberta, one hundred and eight miles, had been ridden in a day by most of the Mounted Police and cowboys who happened to go that way.

SIX-DAY RIDES. Kit Carson carried military despatches from Omaha to Los Angeles and back (circa 1841), a lone ride through hostile tribes of four thousand four hundred miles. When he was resting at Los Angeles he joined a party of Mexican gentlemen each taking one saddle horse. The six men rode along the California coast from Los Angeles to San Francisco, six hundred miles in six days. Only two of the party changed horses.

Among the Robbers' Roost, and affiliated gangs of Rocky Mountain outlaws, I found that it was their custom to plant little bunches of ponies here and there in pasture. When they happened to be in a hurry they would travel from pasture to pasture, and at each of these take a fresh mount. Six hundred miles in six days was not unusual they told me, and, from what the sheriffs said who tried to catch them, I think that the robbers spoke in moderation. They were much the most truthful men I have met on the stock range.

MARCHES WITHOUT REMOUNTS. In the

North-West Mounted Police we reckoned a day's march at forty-two miles for saddle horses. On Colonel Irvine's three hundred mile march to prevent the North-West Rebellion of 1885 we carried all fuel, forage and supplies in sleighs so that the speed was reduced to that of a convoy, but it worked out at forty-two miles average, ending with sixty-two miles on the last day.

A two thousand two hundred mile Viceregal tour is said to have worked out at forty miles a day ; but one patrol I rode in of seven hundred miles only gave thirty-four miles a day for average, even with occasional change of horses. It was bad, shocking bad, but has it been equalled by any mounted troops of Europe ?

MARCHES WITH REMOUNTS. On the cattle industry a Roundup Outfit is commanded by the owner or by his foreman. Under him are three separate departments : (1) The cook, who drives a waggon which carries the men's bedding and is fitted up as a kitchen. The waggon forms a moving base to the expedition, and travels about ten miles a day. (2) The horse wrangler is a herder in charge of the herd of ponies used as remounts. (3) The working force of cowboys.

Each rider has his own string of ponies

usually seven in number running with the herd.

ROUTINE. Long before dawn the wrangler drives the herd home to the camp, where two men hold ropes outward from the waggon, making a rough enclosure in which the ponies are handled. Each rider selects from his own string the pony he needs for the morning's work. At noon the herd is run in and he picks out his afternoon horse. At supper time the herd is run in and he selects his horse for night duty.

The rider uses his first three horses and his second three horses on alternate days, keeping the seventh in reserve. These animals are not fed with grain, but live entirely on the range grass. By changing his mount six times in each two days he is able to ride on grass-fed ponies at an average rate of fifty miles a day for a period of eight months. The distance ridden in this season is 11,150 miles.

CHAPTER VII.

THE PLEASURE HORSE.

I. THE BENT LEG.

The human mind may be likened unto a stable with horses all in a row. That strong team Tradition and Custom are overworked. Bias and Prejudice have plenty to do. Passion and Vice get an occasional airing, and Vanity has daily exercise. But Reason is kept in his stall, the master's own mount, stale for want of use. He is not popular with the other horses, he is not easily ridden, is heavy to handle, and goes painfully lame from having been kicked too much.

Let us try him :

THE BENT LEG. So far we have traced the straight leg method of riding from savage life through the Greek practice and that of the Ages of Armour. We have seen the European war seat and war saddle adapt themselves to range practice in wild countries, and so become the basis of outdoor horsemastership.

In sharp contrast to the straight leg and weight distributing saddle which has always attended the use of the European horse, is the universal practice associated in all ages with the Bay horse of Africa, and the Dun horse of Asia. My bits and scraps of reading present a general picture of the Oriental horseman as highly perched, with a bent leg and a long reach, preferring light scale or chain mail to heavy armour, prone to a swift onset, a brisk *melée*, and speedy disengagement since the days of the Parthian cavalry down to the Moslem conquests, and on to the chivalry of India, the cossacks of Russia, and the hapless Dervishes of the Soudan. From Mongolia to Morocco across the whole breadth of the Oriental World this high perch, bent leg and long reach seem to be universal in all ages.

In arid countries the ass and the camel were ridden long before the pony, and it seems quite possible that their pad saddles were transferred to the horse without much alteration. My first impression of this was during a donkey race in Portugal. Our mounts stood well over fifteen hands, magnificent animals. The saddle was a broad flat pad like that of women athletes in a circus, and, gripping its sides with one's calves, the seat was fairly secure.

Anyway a galloping ass is a deal better ride than a bullock. I was winning the race when my moke, being of the Moslem faith, knelt down to say his prayers, and I went on alone.

From watching Moors, Cossacks, Jockeys and other bent-leg horsemen I have an impression that a similar halt of the steed for a moments' prayer would have the same effect ; but that the Spanish Picador, meanest of the straight-leg riders, would manage to stay in the saddle.

In the days of armour the gentleman-at-arms wore doublet and trunk hose, riding light horses for hunting, hawking, or even travel. Ladies rode also, and there was cantering where the ground permitted. But I cannot recall any mention of jumping in England until the time of the Civil War. Prince Rupert escaped a pursuit of heavy cavalry by jumping. A fugitive cavalier pursued by Roundheads, leapt from Wenlock Edge.

By this time a few Barbs, and Eastern horses alleged to be Arabian, had added a new strain to the English stock. Oliver Cromwell, for instance, a notable breeder before he went into politics, had an imported sire. The thoroughbred, who is $\frac{7}{8}$ Arabian by blood, made jumping possible.

In the days of Queen Elizabeth England was still a sheep range, producing wool as the staple industry, and supporting five million people. Sufficient grain was raised for feeding the small population ; and to keep the sheep off their crops the people had invented a fence peculiar to Britain. This fence consisted of an earthwork of ridge and ditch called a hedge-row. The ridge carries, and the ditch waters, a row of bushes, trimmed yearly to make it strong and dense, and known as a hedge. Unlike rigid fences the hedge may be safely jumped by horses who have the courage.

As the population increased the swamps were drained and forests cleared for farming and, outside the sheep down, the whole country was meshed with an intricate small skein of hedges.

At a period when guns were very short of range, and poison was still dear, the foxes became abundant and destructive, so that a special hound had to be bred able to run them down. This was a matter of business until foxes made it a sport, and from about 1740 survived as sportsmen rather than be extinct as merely vermin. There was no detriment to the land from hunting on winter fallows ; and, but for the fox, our people would have been

driven to invent some other way of breaking their necks to let off surplus energy.

For rich people there is no cleaner or healthier form of pleasure, no better training in nerve and all that makes a man.

The training for leadership among the Germans is a matter of beer and fencing, among the Americans of office work, among the British of field sports. Which method is best to save leaders of men from corruption, and decadence? The mettle of our pastures gives cool judgment in administration, leadership in affairs, and in times of peril a sterling worth of manhood proof against disaster.

Far be it from me then to deride the British horsemanship. Any horseman who can tolerate so slippery and unreliable a contraption as the English saddle is greatly to be envied and admired.

Always a timid horseman but emulous, I made two attempts to ride the damned thing, and came to grief without the least delay. The third try was quite a success, the occasion being a cavalry charge into a converging fire at point-blank range. I was much too scared to fall off, and so came to the conclusion that any fool could ride anything if his attention were sufficiently distracted by a hail of bullets.

After that I went to the best horseman I could find in England and asked him to explain the merits of his saddle. "The English saddle," said Lord Lonsdale, "is made for falling off. You see it throws the rider clear of a falling horse."

This really explained the English saddle in terms of sport, which any fellow ought to understand. So I tried the saddle again, and found that one could ride straight leg at any gait quite easily by merely dispensing with the stirrups. It was almost as good as bareback. But with the leathers shortened, riding bent-leg, one could actually use the stirrups. Since then I have put my stock saddles away, and taken recruit lessons in the riding school. A little powdered resin on the leather straps of one's breeches makes them look quite smart and deceives the Instructor in Equitation. Still, I am a novice, trying in vain to rise at the trot with that poke forward of the head which so beautifully imitates the movement of a hen as she enquires for worms.

It is only by practical testing that I learned the qualities of the English saddle, and so brought it into comparison with that of the stock range. It is not easy to free one's mind from bias, to realise that perfectly sane men

have reasonable methods other than one's own, and that the mere fact that one's critic is an obnoxious bounder does not dispose of all his arguments. I venture to claim that the range horseman has intelligence equal to that which guides British horsemanship, and added to that the deeper intimacy of one who allows no hired hand to touch his horses, who cares for them as a hireling never can, and whose life depends upon his competence. It is from the range point of view that I venture now into the field of criticism.

To teach a novice to ride with the stock saddle I lead him on to talk about his girl. By the time he forgets that he is exaggerating on horseback he rides quite decently.

To teach a novice to ride with the English saddle is a matter of long and severe training. In the end he rides in spite of a saddle, which is by no means an aid to horsemanship.

The difference between straight leg and bent leg riding is not of the slightest consequence to the horse. To ride the stock saddle with comfort the leg must be straight. To ride the English saddle safely the leg must be bent. The total difference then is one between two saddles, the English model being excellent for sport, but otherwise quite useless ; while the

stock saddle, which cannot possibly be used for flat racing or jumping, is of value to a man earning a living on horseback.

II. THE INDOOR HORSE.

HIS HOUSE. Because we love horses we have been seeking guidance from nature as to their management. "Nature" is only a sort of nickname for God, who bids us love our horse neighbours as all other neighbours. If our religion is not a sham it consists of love, and these our neighbours need a love which must be filled with live intelligence.

I doubt if God believes in the church I belong to, but I am sure He approves of our poor attempts to do our loving duty as horsemasters, as soldiers, or in any trade to which we have been called. This is the spirit in which I dare to adventure upon criticism, approaching civilized horsemastership from the singular point of view of the range horseman.

I do not presume to criticise the management of thoroughbreds, but wish to speak merely for common horses with whom I may claim friendship.

In buying a range-bred horse one takes the legs and feet almost for granted, but in civilization one deals with doubt and misgiving because the animal for sale is presumably a

wrong'un. The one thing that amazes the range man is the astounding number of ailments contracted by civilized horses on only four legs in a limited span of years. It is a strong presumption that there must be something in civilized horsemastership to account for the general unsoundness of the stock, the lack of endurance, the total failure in mobility.

The vital needs without which a horse will perish are water and grass. It is considered that the water flowing from limestone rocks, which carries carbonate of lime, is best for building bone. It seems quite possible that other mineral bearing waters have their usefulness in supplying elements needed for blood, muscle, or nerves.

The natural food of a horse is sun-cured tuft grass growing in arid regions, but a perfect imitation is the usual mixed feed of oats, chaff and bran, with the common equivalents used for varying diet. Next in value is the upland pasture of damp climates, worst is the meadow grass. The conditioning of horses in any green pasturage depends upon grain, but one should not in any feeding neglect rock salt.

If sunshine and fresh air were vital needs pit ponies would not live. Sun and air are no more necessities to a grown horse than eyesight is to

a man. So one needs to examine carefully and to reason closely as to the actual value even of air and sunshine.

The range is dry, parched, and above all things hard ; and from the hardest ground come the breeds of especial value by reason of sound limbs and steel-like hoofs. The hardness of ground is due to the fierce light and heat of desert climates.

Again it is known that sunlight kills the germs of nearly all diseases, provided the air can reach them.

Unless they are robbed of their coats horses are almost indifferent to the greatest known extremes of dry heat and dry cold ; yet, if exposed to wind they lose weight rapidly, and are intensely susceptible to draughts. The horse's natural shelter is a wind break.

To meet all these conditions the stable in rainy climates must have a roof to keep the standings dry, and yet should be roofed with glass to let in sufficient light to kill all germs of disease.

Yet any stable, warmed by the heat of horses, however carefully cleaned, is fouled by their dung and water, and so becomes a forcing house to breed disease unless one removes the walls. There should be no walls, but the

stable should be built like a Japanese house with transparent and portable screens, close fitting against draughts, which can be set up on two windward sides with every shift of the weather. By no other means can the diseases be swept away which make the stabled horse a byword for unsoundness.

If regions of hardest ground produce the best legs and hoofs, it does not follow that stables ought to be paved. Natural ground however hard is springy, but pavement is dead hard and slippery at that. The English horseman explains "It haint the 'unting as 'urts the 'orses 'oofs, but the 'ammer, 'ammer, 'ammer, on the 'ard 'igh road." All who have seen the strains and tensions of cowpunching and noted the perfect soundness of cow ponies will agree that it haint the 'unting. But anybody who watches English horsemen with pleasure horses has noted the exceeding care with which they are ridden on the dirt rather than on the crown of a road, on the grass by the road rather than on the highways, and on any open route across country, rather than on the roadside. They get very much less hard going than the average range horse. The draught horse may suffer from the highway, but certainly not the hunter who is equally unsound.

Yet both have standings as a rule on a paved floor for not less than eighteen hours out of the average twenty-four.

A notable difference between the sound outdoor horse and the unsound indoor horse is in this matter of standing, for the range animal visits but does not live in a stable, while the unsound animal spends three fourths of his time on a hard pavement. I have noticed also in travel that when I brought weary horses to a stable with a wooden floor their pasterns always swelled over night. On a metalled or paved floor the swelling was almost as bad as on wood, whereas on earthen standings there was never the slightest trace of inflammation.

In recent handling of some sixty army horses I took them from pasture to horse lines without noting much unsoundness on either ground. Unsoundness developed when I took them to paved stalls, but was much diminished when I moved them to earth-floored sheds. I find too that notable horsemasters have removed the pavements from their stables in favour of clean, dry, well-drained earth standings ; or, failing that, lay bedding a foot deep.

But my experiment has gone further. My horses have not only earth standings, but sheds so built that they are walled only to

windward. The gain in general health is beyond all question. Both in theory and in practice I have reason to believe that earth-floored sheds walled to windward only will cure the chronic unsoundness of stabled horses, provided that the strongest light possible is brought to bear for the killing out of disease germs. On the same principle which imports cats to look after our rats and mice, one might introduce some benevolent microbe whose duty it would be to eat disease germs in a stable floor.

III. THE INDOOR HORSE.

HIS WORK. So far analysis has shown two types of equipment : the weight-distributing saddle for war work, ridden straight-leg by soldiers, stockmen and others earning a living ; and the light slippery saddle for running and jumping adapted to the bent-leg riding of pleasure horses for sport.

The saddle is but one of several factors in horsemanship, so we must isolate these factors one by one before we can reach conclusions from our study.

For the purpose of isolating the several factors in horsemanship, The Legion of Frontiersmen managed to organize a series of tests on English highways. In each test two groups

of three or four horsemen apiece, working in rivalry, rode fifty to fifty-five miles on a Saturday, then back again on the Sunday. Afterwards a veterinary surgeon reported on the condition of the horses.

The first test was made under conditions of unusual heat, and after one serious case of heat prostration the homeward run had to be made at night. The riders were veterans to the age of seventy-two, with an average of two old wounds, and more than two war decorations per man. Our cab and 'bus horses finished like the riders, in good time and condition, but did not equal the usual gait of the annual Stock Exchange competition of men afoot on the same London and Brighton road.

SADDLES. We never had the rival types of saddles tested by teams, but each man rode his own, and for short marches like ours the difference was slight. The men with stock saddles were less weary, and their horses fresher, but not to any notable degree.

SEAT. In one test a competitor failed us, and was replaced by a sailor who had not ridden before. At first he butted his horse backwards into shops, so we had to change about for ten miles until we found the best mount for his peculiar needs. After that there

remained one hundred miles, and his horse got the best report. A sailor has balance, and given that mere form is not important.

TYPE OF HORSE. We hired 'bus and cab horses because they were cheap ; but in one of the competitions were opposed by a group of horsemen riding their private hunters. Our working horses finished fresh and on time, but the pleasure horses broke down and had to come home by train.

I might enter into the details of a dozen other exercises which tested the indoor horse and the English equipment, but all may be summed up in a single broad generalization. The pleasure horse and his equipment are so highly specialized for running and jumping that they have ceased to possess the slightest value for civil and military working horsemanship.

CHAPTER VIII.

THE SOLDIER HORSE.

A habit of enlisting for campaigns has given me some desultory training with British irregular and auxiliary forces—Horse, Foot and Guns. Without the slightest pretensions as a soldier I have enjoyed, on active service, watching the military practice in horsemanship in its amusing contrasts with the methods of frontier life.

It seems to me that the British and especially the Irish horse-breeding, and the national amusements for mounted men—hawking, stag-hunting, fox-hunting, steeplechases, flat races, and polo—for example, have given to British mounted troops the basis of a horsemastership which has been gratefully copied by civilized armies and disabled the mobility of all alike. The cult of the pleasure horse has ousted the old sober methods of war horsemanship. This may in part account for the chasing of the Spaniards and Portuguese by their lively American colonists, of the British by the

Argentinos, Americans and Afghans, of the French by the Mexicans, of the Germans by the Damaras, of the Italians by the peoples of Erythrea and Cyrenaica, and of the Russians by the Japanese. Three hundred thousand of my countrymen spent three-and-a-half years in persuading fifty-five thousand Boers to accept full compensation for their losses. This episode filled with unholy joy the nations which had not lately been whipped by mere outsiders because they had prudently abstained from war. One does not recall, however, so very many recent campaigns in which barbaric horsemanship has been put to shame and flight by any regular cavalry.

So, if my adventure in uncouth criticism bears incidentally upon British methods, its motive is merely to discover why civilized mounted troops are not quite a success in dealing with irregulars of the open range. If Army methods are really the best, they should have an unbroken chronicle of victory. If range methods are really the best, the military art of horsemanship needs thinking over by every civilized horseman who loves his country.

If the defeat of civilized armies is not explained by their horsemastership, it is not less in need of explanation.

I hold it as an article of faith that the British Army is not excelled, man for man, by any in Europe, but does greatly surpass all others in its power of adapting itself to new conditions, maintaining its powers at great distances from its base, and perfecting in its troops the highest ideals of manhood. And yet in all armies men are taught to obey before they think, and, thought being secondary to discipline, is rather apt to lag. The discipline which creates a mob into a weapon tends to disable men in army trades other than that of fighting, so that the departmental or thinking departments are less efficient than the executive. Character is trained to a supreme degree, and the military courts are cleaner, quicker and more direct than the civil in doing justice. Yet intellect takes its chance of surviving discipline. In a world which is managed by men too old to be receptive of new thought, the person with original ideas is looked upon as a public enemy, and the Army is always certain he must be an awful bounder. The aeroplane, for example, was more important as a military idea than anything since the invention of gunpowder, but the inventors and manufacturers in several countries went bankrupt while they waited in vain for orders from

the armies. The German War Office was the first to come to their rescue.

It is only by such reasoning as this that one understands why mounted soldiers are given breeches with buckskin straps to help them to grip a saddle specially treated with beeswax to make it slippery. Constructive thought would remove the strapping to make the breeches slippery as the saddle ; or, if a grip is wanted would retain the strapping, and roughen the saddle seat and panels by using the leather inside out, or replacing the surface with buckskin.

Early in the eighteenth century British racing and fox-hunting became fully organized sports which needed bent-leg riding and a slippery, light saddle. The British Army was not officered by professional soldiers, but by sportsmen who bought commissions. The training of officers was in the hunting field, and the old straight leg, weight-distributing war saddle gave place to something really up-to-date. This was the military saddle, too cumbersome for running or jumping, too small for weight-distribution, and therefore useless either for sport or war.

Meanwhile the Riding Masters who were professional soldiers, and ceased to learn when

they began to teach, wrought with fanatical zeal to compel straight-leg riding on a bent-leg saddle, and so got a magnificent tally of ruptures and sore tails. In 1805 Prussian instructors were brought to England to enforce the straight-leg seat on the bent-leg saddle. It is only in the twentieth century that this wonderful kidney-crusher military seat has been mercifully abandoned. The army has adopted the hunting seat, and one reads the last word in Major Birch's book on "Modern Riding."

"The rough-riders from the Royal Artillery Riding Establishment, using the hunting seat, sat perfectly without either reins or stirrups over a five-foot six-inch rail—one horse jumping six feet—besides other formidable obstacles, which proves that no better seat could be wanted for practical work."

The practical work, one notes, for a civilized Army, is jumping!

What is the horse to be used for? Pleasure?

By all means let the high-strung, highly-fed, massaged, hospital-bred, courageous, and powerful but exceedingly delicate blooded horse be used for pleasure, and for pleasure only. One does not use a racing yacht for cruising, because she is too fragile, or for cargo because

she has no stowage. Use the blooded horse for running and jumping, with a day's rest following each day's sport. It does not matter if the rider's weight is concentrated on the space of a postage stamp. It only matters that the equipment be light for high speed, and slippery to throw the rider in case he is not wanted on the saddle.

What is the horse to be used for? War? Then if we love our country let us forget tradition, take a rest from filling up returns, and set ourselves to the exercise of human reason until we find out what we really want. Why do we use the horse in war? To carry men, to haul guns, and draw supplies. Why do we use the horse for transport? To quicken the pace, and ease the labour of men. Why do we need this mobility? In order to concentrate troops at distant points where they were not expected. Mobility is not jumping on Germans, but the long, swift march that covers and supplies the advance or the retreat which shall decide the issue. Mobility may include the getting and rendering of vital news, the sudden seizure of a strong position, or even the special privilege and glory of shock action.

Those of us who indulged ourselves in the

habit of thinking, knew many years ago that mechanical transport would carry and haul men and supplies much quicker than horses could upon a highway. But we also observed that war destroys the road, and that campaigning is a cross-country exercise wherein the horse can hold his own against the car.

In the same way we knew as far back as 1896 that aerial warfare would evolve in three phases: reconnaissance, fleet engagements, and occupations in force with aerial transport.

Yet, while the car and the aircraft have been foreseen by everybody who took the trouble to think, we have to deal in fact with present needs for troops transported by horses, for whom the word mobility means rapid and sustained haulage and carriage of weight. It is not the art of jumping hedges, because they do not exist in any probable terrain of war.

What then, are the factors for mobility?

BREEDING. In the throes of war for our existence, while every luxury must be dispensed with and every available man called to the colours, the British Government is solicitous to preserve hunting and racing. The authorities would preserve the trade of horse-breeding lest there be scarcity of army remounts. Let us breed pleasure-horses, they

tell us, in order to secure a stock of working horses. So let us encourage yachting to give us ships for cargo. Let us breed guinea-pigs as material to coin guineas. " If a yard of soap will make a flannel waistcoat for a pig, how far is it from the dome of St. Paul's to Christmas Day ? " So mental confusion verge upon madness.

The mettle of our pastures, and perfect artistry in selective breeding, have given to the British Isles the leadership of nations with almost every type of domestic livestock. But the high specialization of each type for a single function disables it for every other use. We have never bred a horse specialized for that single purpose of rapid and sustained marching, which is mobility. Our pleasure horses, excellent for sport, are expensive, delicate, unsound-lacking in endurance when we put them to serious work. As yeast is to dough, blood is to any livestock, and there must be thoroughbred blood in any working horse who has to face the terrors of modern war ; but if there is any guidance in the origin and natural history of horses, the one type to give mobility to an army must be bred away from all green grasses and soft ground, on those arid plains which alone can make sound limbs, hard hoofs,

strong teeth and high endurance. It would be most reasonable to breed from Duns.

As the Royal North-West Mounted Police of Canada have double the mobility of any regular troops in the world, their system of getting horses may be worth considering. Certain ranches of Western Canada have imported British thoroughbred studs, and bred from range mares a strain known as the Broncho. Averaging fifteen hands two inches, and 1,025 pounds in weight, these gelded horses and mares are raised on range grass under range conditions, broken at the ranches and bought for the Mounted Police at contract rates.

Ranches in any arid lands of the Empire such as Southern Alberta, South Central British Columbia, Western South Africa, or Australia, would supply a stock for the army much sounder, and more enduring than any horses which can possibly be bred on soft ground or green grass.

MANAGEMENT. Our analysis of the stable showed the closed shed as a forcing house for disease germs, and the metalled floor as preventing a horse from resting on his feet. To copy the natural conditions of healthy range life the building needs the dry floor which

involves a roof, earth standings on which a horse can rest, and a wind screen to keep out bad weather. In practice this open earth-floored shed kills out the germs of disease, rests the horse, and so prevents or cures the maladies of the feet and legs which disable indoor stock. But, while the horse is fairly sound so soon as one adapts his home to the conditions required for his health ; no indoor life trains either horses or horsemen for the mobility needed in campaigns.

The civilized stable management with grooming and massage, clipping and singeing, docking and trimming of tails, hogging the manes, and all the practice which involves the use of clothing is excellent with the indoor horse. In the same way a hospital is good for the sick, but not the sort of gymnasium which makes men strong and hardy. The treatment makes a horse glossy and beautiful, but sensitive rather than robust. It does not make the horse an outdoor person able to face bad weather, rough feeding and long marches. For that we must consider outdoor management as applied to an outdoor horse.

The British South African Field Force lost 340,000 horses, some of them civilized, others from wild ranges. I was serving in an irregular

unit when a bunch of Argentine remounts arrived in camp. They showed signs of exhaustion from their voyage, but had not been pastured after their landing in Africa. The grass surrounding our camp was fairly good, free from disease, and secure from attack by day. So the officer commanding shackled the remounts in our lines, and I was punished for feeding mine with grass. There was no hay, so the horses had straight oats. As the sky cleared or clouded the weather was frosty or snowy, so the horses were blanketed. The blankets were always sodden except when they stiffened with ice. On the fourteenth day the last of these horses died. The whole was a beautiful exhibition of stable management applied to outdoor horses without a stable. I do not remember an instance of army authorities consulting range horsemen as to the management of range horses on any range. Neither has it occurred to any army that the outdoor horseman may have useful knowledge concerning the outdoor horse. And yet the sacrifice of 340,000 horses might have aroused misgivings as to the Army system of management.

I am writing from practical experience in stating that in the British Army authority

exists for billeting horses in pasture with half rations of forage at the discretion of the officer commanding the unit. Pastured horses condition very rapidly, but soften a good deal in a wet season, so that one needs as usual to supple the harness with oil, and also to provide some sheepskin for padding of parts which cause chafing. To meet the need of having horses instantly available, I used two fields, the richer for night pasture, the poorer for my horse lines and drill ground. As horses in pasture grow wild and difficult to catch if chased about by recruits, I had a rope tied to a tree near the corner of the field, and held outward by two men, forming an enclosure into which the herd was drifted for catching after the night's rest. Drifting and catching needed no more time than the work of unshackling on the lines.

The system of pasturing by night ensures a clean bed for horses to lie down, whereas the lines, however carefully cleared of manure, are very soon fouled by staling, while the ground is trampled into mud or dust. Old horse lines make most dangerous ground for camps long after the visible dirt has been grassed over. The insects and germs from the horse lines are liable to affect the health of troops.

Except under management of most unusual skill, any assemblage of horses is liable to stampede. I note this in a camp which has lost two men killed and one wounded, with two horses killed and two wounded within the week, fair evidence that stampedes are dangerous. But the danger is greatest where horse lines and camp lines are set close abreast, so that, if the horses stampede, the men are trampled to death. A stampede from herd or pasture is seldom the cause of serious accidents.

Docking or trimming tails, and hogging manes are hardly wise outdoors, considering that the mane and tail are special devices of nature to keep off flies. As horse lines are an excellent breeding ground for flies, it is precisely on these lines that manes and tails are needed.

Further, it seems unwise to remove with a brush that natural oil in hair and skin which preserves a horse from being left stark naked to the rain. The grease which merely clogs the brush, was needed by the horse, and if it is taken away it should be replaced. Horses if groomed outdoors should be groomed and oiled so that the hair may shed rain and keep the skin dry.

It is argued that the massage action of good

grooming stimulates the supply of oil to the skin and hair ; but from careful observation I think this applies rather to the long and severe grooming of stabled thoroughbreds than to that lick and a promise which horses in the lines actually get in bad weather. Just enough grooming is done to remove the oil, but not enough to stimulate the supply.

I note that the more disastrous practices are those of tradition and custom, and are difficult to trace if one is seeking authority from the Regulations and authorized manuals. These are framed in a most reasonable spirit, and allow wide discretion to the Commanding Officer. So far as my experience goes, experience and research has not only been tolerated by the Authorities, but actively encouraged and helped.

EQUIPMENT. The application to Army use of a saddle made for falling off seems a little eccentric until one begins to reason. The idea is not without value, because an Army in time of peace is really a school of manhood, which needs extending until every youth has been made into a man before he gets a vote as a citizen. At a cost of life not greatly exceeding the death-rate from closed windows (phthisis) we have under stress of war an

actual national training in manhood which has averted the fall of the British Empire. Moreover, the British military training manufactures a gentleman who can be trusted by the enemy with the care of his wife and daughters. If it is useful in the making of his manhood we should not grudge him a saddle for the prevention of riding. Morally, such a saddle is as good for Tommy as it is for the rich folk of the hunting field.

It is when one begins to consider mobility in the field that the pleasure saddle seems an odd selection. Why not a skipping rope? Troops using the English equipment have rarely averaged twenty-one miles a day. Troops using the stock saddle have rarely gone so slow. The old war saddle has a record of nine hundred years in every kind of warfare ; and has survived the extreme test of the stock range in replacing the English saddle with the Mounted Police, and mounted troops of Canada. Only the mistaken energies of sportsmen in the British Army displaced the practical equipment designed by soldiers. A return to the old saddle would increase the mobility of all mounted troops.

HORSEMANSHIP. A hundred years ago the recruit came from a farm and had been raised

on horseback. Even the riding masters of the period could not quite spoil his natural horsemanship. To-day the recruit comes from a town, looks on the horse as dangerous, and lacks the muscles of hip and thigh which must be developed before a man rides well.

For civil purposes, the stock saddle, and a little guidance from horsemen will teach a man to ride, and the riding school would merely delay his progress. But Army purposes require a firm seat, a gentle hand to control the horse for military formations, and a perfect suppleness from the waist upwards for the use of weapons. These three vital needs involve a riding school. So the rookie is introduced to the riding school horse. Outside the school that horse is an iron-mouthed brute, who joggles, and cannot be induced to work apart from his comrades. Inside the school he understands the riding master's talk, goes through the drill with or without a rider, and tries to have some fun out of his rookie to pass away the boring hours until he gets home to stables and a meal

The first job is to give the rookie confidence in the horse. To inspire the rookie with confidence, the riding master flicks the horse's heels with a long whip. The rookie's confidence

that he will tumble off is nearly always justified, and in many instances his nerve is broken. Then the bully calls his victim a coward, and the rookie, made unfit for mounted work, drifts to some staff employment or transfers to a unit of foot. The use of dummy horse for beginners would develop the riding muscles without risk of spoiling the man. It would be reasonable also to tell the recruit that a little fuller's earth to absorb the moisture on his chafed skin will avert most agonizing pain.

It is a curious streak in military character that there is a tremendous fuss over a horse gall the size of a sixpence, but that a man skinned from crotch to knee is blamed as a malingerer if he applies to the doctor for help.

The saddle being worse than useless, the rookie is glad to be quit of such an obstacle to his progress in riding. Moreover, his puttees being worn with edges up, they catch in the horse's turned down hair, and so give him a chance to grip bareback. Leave out the saddle altogether and the plucky and intelligent recruits of the new armies are quick to gain confidence as horsemen. They learn by sensible methods taught to the Greek

rookies of Xenopohon's ever-glorious Ten Thousand.

There are three types of Riding Establishment: the closed building, so hot that it stupefies the man just when he needs his brains; the ring in a field which has at least the blessings of fresh air; and the open field of the up-to-date instructors. A cheery and sympathetic Riding Master will do better under a roof than a bully can even in the open field, but the best and most rapid training I have ever seen was given in open field by a Regular soldier who abstained from losing his temper. In civil life I had seen a range horseman teaching English pupils with equal success, and the methods of the two masters were identical. Men who had never mounted before were taught within a week such circus tricks as jumping, wrestling bareback, tug-of-war mounted, and making horses climb over ugly ground. It was a punishment to be excluded from the lessons. From the civilian school pupils passed out after six months' training and earned a living as stock riders. From the military school the men were transferred to a station with the old ring menage and never recovered the resulting leeway. Given equally good instructors, I should say that one month's

training in open field is equal in value to four months in the outdoor menage or five months in an indoor riding school.

In training men my first measure was to select sympathetic instructors, and relieve for other duties any N.C.O. who showed the slightest infirmity of temper. Released from all bullying, nagging or fear of punishment, my rookies were sportsmen who would greet me with a cheery grin. The second measure was to cut out the element of monotony in routine, so that the riding field became a place of surprises, of varied sports and competitions where each man tried to excel. From the first I would take the whole class away from the schooling for an occasional joy-ride along the grassy roadsides, slowly increasing the pace from walk to joggle, and finally to long trot on the home stretch. When we came to be tested against other units we had no reason to regret our unorthodox methods of training.

My second month's riding school would involve a very serious schooling for officers and Non. Coms. in teaching them how to handle a unit training for field mobility. It would be limited to three exercises all of which I have tested with success in England during the past decade

FIRST EXERCISE. Taking a feed and haver-sack rations to make a day's march and practise the noon halt.

SECOND EXERCISE. Taking vehicles or pack animals according to size of unit, to make a two days' march with a night bivouac. Instruction is needed in the use of natural wind breaks and slopes of ground, also to adapt the sweat pad, blanket, overcoat and saddle, into a dry camp regardless of the weather.

THIRD EXERCISE. After extensive practice at the home camp, in cooking without any utensils except the pots and cups for the tea or coffee, to make a night bivouac without any kitchen transport.

So far one could dispense with the camp equipment, and almost the whole kitchen ; but concurrently with this training to drop needless baggage, there would be first exercises for scouting and road reports, vedettes, flankers and despatch riders.

MOBILITY. The factors for mobility may now be added up : The breeding of horses on pasture natural to the species ; sheds to secure dry earth standings and a wind break ; outdoor management ; a weight-distributing saddle ; an actual training of men and horses to rapid and sustained marching with reduced transport.

With these few measures the mobility of mounted troops could be doubled.

To quadruple the mobility of mounted forces one has merely to add the stock-range system of a pony herd supplying two mounts per man. In an enemy's country each horseman would ride, and lead his spare mount, changing over at halts. A march would be continuous with short halts, up to the limits of endurance for the men and horses available, and this after proper training would not be far short of one hundred miles a day. From the moment when a war of positions culminates in advance or in retreat, flying brigades or even divisions could play havoc with enemy's plans by threatening his lines of communication. The raid, as practised by the Confederate, General Morgan, in the American Civil War, is no longer healthy because there are aircraft about. Detached units cannot, as in past times, be left in the air to forage for themselves ; and yet mobility of the screen and wings may prove as useful an aid to a marching army as claws are to a crab.

CONCLUSION.

This book has been written in spare hours off duty while the air throbbed all round me. The crackling rifle fire at the butts, the uproar of the batteries at practice and frequent bursts of bombs, the buzzing aeroplanes as they pass overhead, rumble of transport trains, and tramp of marching troops, bands on a Sunday, and choirs of trumpets sounding the evening calls are echoes, all of them, from the great thunders of the Armageddon.

The sounds will die away into the distance to a last muttering beyond the skyline. Then those who are left of us will put away our weapons and our saddles, and go back to civil life. But we shall all be changed.

No man returning from a journey, has ever come back with the same self into his former life. From this travail we shall come changed into a different world. A new and realized manhood will meet a tried and bettered womanhood. We shall not any more be able to live content in the old world of selfishness and

slackness. We shall demand for men a training of their manhood, for women a training of their womanhood.

We shall value manliness more than scholarship, ease or wealth, or even the freedom we fought so hard to save. Food has no flavour until we have been hungry, rest has no value unless we have been weary, life has no zest save that from fierce endeavour, it is the work we do which builds our strength. The manhood of our fathers came by use of arms, and of horses, by going down to the sea in ships, by hard, rough living, taking risks and enduring pain, by generous giving and honest loving.

The manhood of our sons will not be made by indoor life, by ease, by softness, by selfishness or vice. The body as well as the mind and the spirit must have daily training, renewal and growth, if we would avert disease, corruption and decay. The future has nothing to add to the past save in the hazards of the air, the fierce delight of handling aircraft, and the hardening of all our fibres in the conquest of the skies. It will be long, however, before the aeroplane can alight in forests, on mountains, rough ground or stormy water, or venture very far from the bases of supply. Till then our industry and our wars will still need horses, and

even afterwards we shall hardly be able to spare them from our pleasures.

In the past, the horses carried our ancestors out of savagery through barbarism into civilization. They saved us from the barren labour of Chinese, Egyptian and Indian cultivators, and gave us the large opportunities of our country life. Horses and shipping added all the continents to our estate, the conquest of the world to our arms, the glamour of adventure to our history. If only we can learn to understand horses with a quicker sympathy, a bolder reasoning, the training which our fathers had as horsemen, will be bettered in the training of our sons.

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